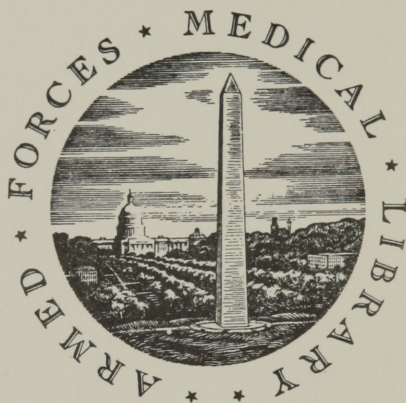




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Sayre (L. A.)

# REPORT

ON

POTT'S DISEASE, OR CARIES OF THE SPINE.

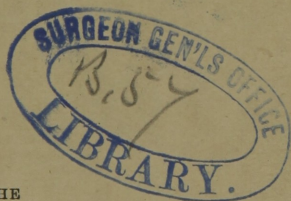
TREATED BY

EXTENSION, AND THE PLASTER OF PARIS BANDAGE

BY

LEWIS A. SAYRE, M.D.,

PROFESSOR OF ORTHOPÆDIC SURGERY IN BELLEVUE HOSPITAL MEDICAL COLLEGE, ETC. ETC.



EXTRACTED FROM THE

TRANSACTIONS OF THE AMERICAN MEDICAL ASSOCIATION.

PHILADELPHIA:

COLLINS, PRINTER, 705 JAYNE STREET.

1877.





Compliments of  
Lewis A. Sayre M.D.

James H. Hoff  
of Springfield



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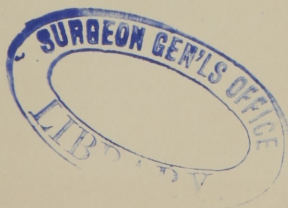
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# REPORT

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## POTT'S DISEASE, OR CARIES OF THE SPINE.

### TREATED BY EXTENSION, AND THE PLASTER OF PARIS BANDAGE.

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MR. CHAIRMAN AND GENTLEMEN :—

THE chief object of this paper is to bring forward some practical facts with reference to a new method of treating Pott's disease of the spine, which I have exclusively employed since Nov. 1874. As you may be aware, I have adopted a plan of treatment which consists in completely encasing the body in a plaster of Paris jacket, and I have adopted it to the exclusion of all others for the treatment of this affection. Before proceeding, however, with the detailed account of how the jacket should be applied, I believe that it will not be unprofitable, inasmuch as I entertain views which are somewhat at variance with those held by the profession in general concerning the nature of this affection, to briefly review its pathology, etiology, and symptoms, and the method of examining the patient.

First, then, with regard to its pathology. For many years I have held that posterior angular curvature of the spine, in common with other joint diseases, is essentially a traumatic affection. That the nutrition of the bodies of the vertebræ, and the intervertebral cartilages, becomes sufficiently disturbed in consequence of some injury to give rise to inflammatory softening and disintegration. That, although it frequently occurs in persons having a tuberculous diathesis, even then it requires traumatism for its development. The view that Pott's disease is essentially

of strumous origin I have long ago discarded. A very much slighter injury, however, may develop the disease in a patient having tuberculous tendencies than in a person having a vigorous, sound constitution, but even in the tuberculous patient I believe that when the spinal affection is developed, it depends, in a great majority of cases, if not in all, upon some concussion or blow or other injury; in other words, that it is of traumatic origin.

*Causes.*—The most common causes are concussions and blows received in a manner which brings either the heads of the ribs in forcible contact with their articular facets, or forces the bodies of the vertebræ into traumatic apposition with their intervertebral disks. Sometimes such injury passes entirely unrecognized by either the patient, his parents, or his friends. And the fact of having received an injury, such as a fall or a blow, some time prior to the development of the disease, is recollected only after the most careful cross-examination. The injury received, inflammation follows, and in due process of time the disease becomes fully developed.

*Symptoms.*—It may seem like consuming time unnecessarily to make any reference whatever to the symptoms of a disease characterized by so striking a deformity as is Pott's disease, yet so many cases have fallen under my observation in which the real condition has passed unrecognized until the "knuckle" in the spine could be seen, thereby rendering diagnosis easy and unmistakable, that I may be pardoned for directing attention to the symptoms of the affection in its very earliest stage. These are sometimes exceedingly obscure. The earliest symptoms of a diseased process affecting the bony structure in the neighborhood of the foramina through which the spinal nerves make their exit are manifested at the distal extremities of the nerves involved. For example, when the disease affects the cervical vertebræ, the patient may complain of a sense of constriction about the neck, dysphagia, irritation of the larynx, with hacking cough, pain in the chest, etc., for a long time before any deformity can be detected by the most careful inspection of the spinous processes. Such symptoms, therefore, are always sufficient to arouse suspicion, and should lead the surgeon to make diligent search concerning every possible condition which may give rise to them, and if disease of the lungs, larynx, and throat can be excluded, the suspicion regarding the presence of disease of the spine will



be greatly strengthened. So, also, when the disease is situated in the dorsal region, the only symptoms of which the patient complains may be a sense of constriction about the body, indigestion, pain in the chest, pain or uneasiness about the heart, etc. And it may be found upon inquiry that he has been treated for heart disease, rheumatism, dyspepsia, and the like. As we descend in the spinal column, the earliest symptoms may be referred chiefly to the abdomen about which there may be a sense of constriction, the patient may suffer from flatulence and constipation. And a very common diagnosis in such cases is that of worms. When the disease is developed at a yet lower point, the bladder and rectum may first announce its presence, and perhaps the chief symptom of which the patient complains will be a frequent desire to urinate.

I have thus merely alluded to the earliest symptoms which may aid the surgeon in recognizing the disease at a time when any plan of treatment, whatever it shall be, can render the greatest assistance towards effecting a cure. At an early period in the disease muscular tension, due to reflex action, brings the body of the patient into a peculiar position in which the chin is made to project, the shoulders to elevate, and the body is moved with the utmost precision in order to prevent any concussion from being communicated to the diseased vertebræ. As a rule the disease is readily recognized when this period has been reached, and when it has advanced so far as to produce actual distortion, the evidence is too plain to be mistaken. I will not, therefore, consume time in referring to the symptoms of the disease in its advanced stages.

*Method of Examination.*—Let us next turn our attention to the method of examining the patient. The examination can be most conveniently made by stripping the child (I say child, because the disease is most frequently developed in children), and then placing him, with the face down, across your lap, the arms over one thigh and the legs over the other. Now you have the patient in a position so that when your thighs are separated, gradual extension is made upon the spine of the child. This gradual extension should be continued until it has been made sufficient to relieve the nerves from all pressure and the muscles from all irritation, but not carried so far as to produce reflex muscular contractions. When that has been done, probably the first thing noticed will be the fact that the child gives a full and



complete inspiration and expiration. The moment your thighs are brought together, thereby removing the extension from the child's spine, the diseased surfaces are again allowed to come in contact with each other, and the short catching respiration, familiar to every practitioner, is renewed.

Muscular spasm usually extends over the entire body when the extension is removed, especially if it be done somewhat suddenly, but if such spasm is not seen it can be readily produced by placing one hand upon the top of the head and the other under the sacrum, and then crowding the bodies of the vertebræ together. Now, all this is easily demonstrated when the disease affects the anterior portion of the bodies of the vertebræ or the intervertebral disks. But the disease is not always confined to these particular parts of the spinal column, nor does it always commence in one or other of these situations. This is especially true of the dorsal region, where the disease, not infrequently, involves first the sides of the vertebræ at or near the articular facets for the heads of the ribs, and subsequently the anterior portion of the bodies of the vertebræ, as well as the intervertebral disks may become involved. In such cases the blow or other injury which has given rise to the disease, as a rule, has been received upon the sides of the body in such a manner as to drive the heads of the ribs forcibly against the sides of the bodies of the vertebræ. You should not, therefore, be satisfied simply with the examination having reference to the condition of the anterior portion of the bodies of the vertebræ, but should examine with reference to their sides and articular facets. This can be very readily done by making pressure upon the ribs so as to crowd their heads in contact with these articular facets.

It very frequently happens that the surgeon is unable to obtain any evidence of Pott's disease from physical examination until pressure has been made upon the ribs, crowding them backwards. For, you may be able to press downwards upon the spinous processes without producing pain; you may be able to percuss the spine without giving rise to pain, and, to all appearance, the spinal column may be perfectly straight, but pressure upon the ribs in a direction to crowd their heads in contact with their articular facets at once produces pain and muscular spasm, thus developing evidence of diseased vertebræ at that point.

The fact that pressure can be made upon the spinous processes

without producing pain should not be regarded as conclusive evidence that the vertebræ are yet in a healthy condition. For, when the anterior portion of the bodies of the vertebræ is affected, such manipulation tends to liberate the diseased surfaces from immediate contact, hence to relieve the pain. This I regard as an important practical point, and one, as far as my knowledge goes, not referred to in the books. If, in a case where Pott's disease is suspected, the surgeon fails to obtain sufficient evidence, by adopting the measures already hinted at, for a diagnosis, he may with advantage use a piece of ice or a test-tube containing hot water, passing them along the sides of the spinal column. When the diseased portion has been reached there will be an immediate effort on the part of the body of the patient, apparently involuntary, to get away from the irritant. Again, any elevation of temperature can be detected by means of Dr. Seguin's thermoscope when the ordinary surface thermometer fails, thus indicating the presence of inflammatory action.

*Treatment.*—I now come to that part of the subject which interests the patient most, viz., *the treatment of Pott's disease.* For several years I had been in the habit of "turtle-shelling" these patients, as I called it, with plaster of Paris, thus incasing the spine and half or two-thirds of the body in an immovable apparatus, after making the proper amount of extension with the patient lying across my lap. I then united the edges of the shell by means of elastic bands passing across the front part of the body, thus giving support, and at the same time permitting the respiratory movements to go on unrestricted. I have had better success by adopting that mode of treatment than by using the best brace that has ever been devised or other apparatus, except Darrach's celluloid jacket or the raw-hide jacket. It was necessary, however, to make those over a plaster model formed while the body was held in proper extension, and although the jacket when first made usually gave great comfort, yet, in consequence of the heat of the body, together with the atmospheric heat during the warm season, it soon yielded and permitted the spine to become distorted because it did not give continuous support.

In November, 1874, a little boy was brought to me having a sharp posterior curvature of the three last dorsal and the first lumbar vertebræ, and there was also partial paralysis of the rectum and one leg. The parents were too poor to buy a brace,



it was impossible to send the child to the hospital, so I felt compelled to devise some plan by means of which the boy could be made comfortable while being transported to his home at Chatham Four Corners, Putnam County, N. Y., nearly one hundred and fifty miles distant. Having studied the subject for some time, and questioned myself regarding the propriety of completely incasing the trunk with the plaster dressing, I had finally resolved to make the experiment as soon as a suitable opportunity was offered. It seemed to me that the opportunity had then come, and that the circumstances justified the measure. Accordingly I directed one of my assistants to suspend the boy by the arms in order to see what effect would be produced, and I noticed that, as soon as the body was made pendent, there was more motion in the paralyzed limb than before, that the pain was very much relieved, and that the patient was breathing much easier. While he was suspended in this manner, I pulled down his shirt and tied it between his legs, thus making it fit the body closely and smoothly, and then took some plaster of Paris bandages which had been prepared in the ordinary manner to be used in the treatment of diseased ankle-joints, and, commencing at the pelvis between the trochanters and the ilium, completely encircled the entire trunk to the axilla. At first I was anxious concerning the effect that would be produced upon the respiration, but inasmuch as the boy cried lustily all my fears in that direction were quickly dispelled, and I went on, reversed the bandage, brought it back to the pelvis, and so went on until four or five thicknesses of the roller were made to completely embrace the body. He was then laid upon his face on a sofa, and was to remain there until the plaster had become firmly set. I left him upon the sofa and went to my lunch, and when I returned, I found, to my complete astonishment, that the little fellow had got up and walked across the office, and was then looking out of the window. Still fearing that respiration might be interfered with too much, I cut through the dressing from the top of the sternum to the pubis, thus allowing it to gape considerably and permit a more complete expansion of the chest. *The boy, however, did not feel as comfortable after as before the incision through the front part of the jacket was made.* I then applied a roller bandage around the pelvic portion of the jacket and again brought its edges together, but left the upper portion to separate as much as the movements of respiration seemed to require. In order to give security to the



upper or thoracic portion, and at the same time permit free expansion of the chest walls, I took the mother's elastic garter, cut it into six strips, fastened them upon each side, and then tied them in front.

The dressing now being completed, I requested the parents to return with the child at the end of a week or ten days, when I would have a Taylor's brace ready and would adjust it. The plaster jacket had been put on simply for the purpose of rendering the child comfortable while being carried home. That was the last I saw of either the child or the parents until the following February.

In the mean time the boy had grown considerably, looked healthy, was able to walk without mechanical support, and was not obliged to support the upper portion of the trunk by placing his hands upon his knees. Without waiting to make any further examination, I at once took the patient in my carriage and started for my clinic at the College. The streets were covered with holes and elevations formed by the ice and snow, and the jolting was almost intolerable, yet the boy made no complaint whatever. That fact of itself showed how efficient the dressing was for securing absolute rest to the diseased parts. At the College the jacket was removed in the presence of the class, when it was found that the curvature was much less, but now the boy was unable even to sit up. As soon, however, as the dressing was reapplied, the mother remarked, "he can now sit up and walk again."

This in brief is the history of the first case in which I applied the plaster dressing completely around the body from the pelvis to the axilla. Since that time it has constituted almost the only treatment which I have adopted for Pott's disease, having employed it in something over one hundred cases, and in each instance with great benefit; but I believe that I have made several essential improvements in its adjustment.

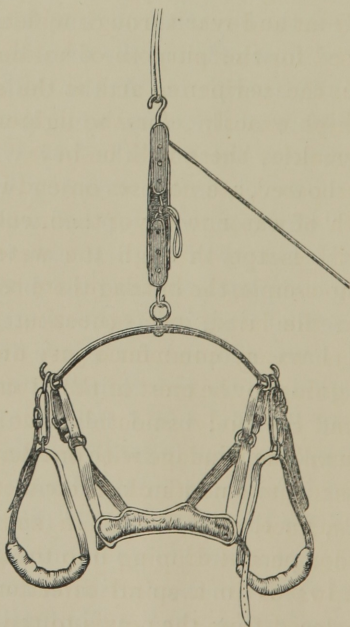
When the disease is situated in the dorsal region, the jacket *should not be opened*, for the reason that if the respiratory movements of the chest are permitted to go on unrestrained, the heads of the ribs are made to move in their articular facets, and the consequence is an increase rather than a diminution of the disease. But the ribs being held still, the diaphragm is made to act more fully, the breathing instead of being thoracic is made diaphragmatic and abdominal, and all that short, grunting, catching respiration is done away with; and notwithstanding the respira-

tion is deeper and more prolonged, it is carried on without any pain whatever to the patient. I believe this to be a practical point of great importance, especially in those cases in which the disease has commenced upon the sides of the vertebræ.

The proper plan of applying the jacket is to take loosely woven cloth, such as cross barred muslin, mosquito netting, or cheese-bandage cloth, and cut it into strips three or four inches in width, according to the size of the patient upon whom it is to be used, and then fill its meshes completely by drawing the cloth through and at the same time rubbing into them freshly ground plaster of Paris, such as has not been exposed to the air. The strips are then rolled up into tight rollers after the fashion of the ordinary roller bandage, and are ready for use at any time occasion may require. They should be kept in an air-tight tin vessel.

When you wish to apply a jacket, the patient is to be suspended by means of an apparatus, prepared for the purpose, consisting of

Fig. 1.



curved iron bar with hooks at either end from which pass straps that are attached to pads that go through the axillæ and also under the occiput and chin, and are capable of being made shorter



or longer according to the length of the patient's neck. The iron bar is suspended from the ceiling by means of a compound pulley through which gradual extension can be made until the patient is drawn up so that the feet swing clear from the floor.

Previous to the suspension, however, a thin flexible leaden strip should be laid upon the spinous processes for the entire length of the spinal column, and bent into all the sinuosities, so that it may take a perfect outline of the deformity. This strip is then laid upon paper and its outline marked with ink, and we have a perfect mathematical outline of the irregularities along the spinal column. After the patient has been suspended, the same leaden strip should again be applied along the spinous processes, as in the first instance, and another pattern made upon paper by the side of the first.

Now we have a means by which comparison can be made, and we are able to determine exactly what changes have taken place in the curve. The shirt, which should be woven or knit without seams, and tightly fitting the body, is next pulled down and an opening made in front and rear through which a ribbon or piece of bandage is passed for the purpose of holding in place a handkerchief placed in the perineum, and at the same time making the shirt fit the hips exactly; for the tighter the shirt fits the less number of wrinkles there will be in it. The roller bandages, previously prepared, are now set on end in a vessel containing sufficient depth of water to cover them entirely, and, at first, bubbles of gas will escape through the water freely. When the bubbles cease to escape, the bandages are ready for use. Then taking a roller in the hand, and squeezing it gently so as to remove all surplus water, commence just around the smallest part of the body, going to the crest of the ilium and a little below it, and lay it around the body smoothly, but do not draw upon it at all; simply unroll the bandage with one hand while the other follows and brings it into smooth close contact with all the irregularities of the surface, over the ilium and dipping into the groin over the abdomen and dipping into the groin again, and so on, from below upwards in a spiral direction until the entire trunk has been inclosed from the pelvis to the axillæ. After one or two thicknesses of bandage have been laid around the body in the manner described, narrow strips of perforated tin are placed parallel with each other upon either side of the spine from two to three inches apart, and in numbers sufficient to sur-



round the body, and another plaster-roller carried around the body, covering them, in the manner in which the first bandage was applied.

These few strips strengthen the bandage, and obviate the necessity of increasing its weight by the application of a larger amount of plaster. If there are any very prominent spinous processes, which at the same time may have become inflamed in consequence of pressure produced by instruments previously worn, or from lying in bed, it is well to guard such places by means of little pads of cotton or cloth or little glove fingers filled with wool which is elastic, which are to be placed upon either side of them before applying the bandage.

Another suggestion, which I have found to be of practical value, is to take two or three thicknesses of roller bandage three or four inches long, and place them over the anterior superior spinous process of each ilium. These little pads are to be removed just before the plaster has completely set, consequently leave the bony part free from pressure after the soft parts have shrunk under the influence of the continued pressure produced by the plaster dressing. It is also well, just before the plaster has set completely, to place one hand in front of the ilium and the other over the buttocks, and squeeze the cast together so as to increase this space over the bony prominences. In a very short time the plaster becomes set sufficiently so that the patient can be removed from the suspending apparatus and laid upon the face or back on an air bed, where they are to remain until the hardening process is complete. A hair mattress answers a very good purpose, but the air bed is preferable, especially if there is much projection of the spinous processes or the sternum.

If there are any abscesses present they must be freely opened at the most dependent part, and their contents completely extracted by means of the wide rubber cupping glass. Sometimes large masses of sloughing connective tissue will be found, which look like wads of wet cotton; all those must be removed. After the abscesses have been thoroughly evacuated, oakum should be placed over the opening and then covered with a piece of oil-silk before the shirt is pulled down over the body. A hole is then cut in the shirt which is to indicate the size of the fenestrum, subsequently to be cut in the plaster jacket, and in it is set a folded piece of pasteboard of the same size, and carrying a long, sharp pin thrust through its outermost leaf. Now each turn of

the bandage can be carried over the pin without crowding it into the abscess below, and you also have a guide in making an opening that shall lead directly to it. When the plaster has nearly set, you can take hold of the pin and cut around it until the pasteboard is reached, and an opening made sufficiently large to allow of its easy removal. The pasteboard removed, you come at once upon the oil-silk which is to be starred, or cut from the centre into strips, so that when they are reversed they will cover the edges of the opening in the plaster where they can be glued down with gum-shellac, and now you have left a fenestrum for drainage that leads directly to the abscess.

As soon as the plaster jacket has become hardened, these patients are able to walk about, and in many instances where paralysis has been present before the jacket has been applied, the patients have been able to walk without difficulty after the application was made. In all cases in which the patients have been unable to walk at all without catching hold of their knees, or hold of a chair or table, or whatever might be within their reach, they have been able, after the adjustment of the jacket, to walk erect and without any support whatever. In every instance in which I have applied it, the pain from which the patients had suffered so continuously has been immediately relieved, and has not returned as long as the bandage remained correctly adjusted.

In some instances indigestion has been the chief thing complained of previous to the use of the jacket, but all their symptoms of dyspepsia have disappeared at once after the application of the bandage. In others a difficult respiration and painful cough has immediately been relieved and has not returned. In short, all the symptoms referable to irritation at the distal extremities of the nerves have been relieved by giving proper support to the spinal column.

The jacket is to be worn as long as it is comfortable, from one to three or four months, or until the patient has grown sufficient to make it necessary to remove it and apply another, or it becomes necessary to remove it for purposes of cleanliness. It can be removed easily by making an incision through it in the median line of the body from the top of the sternum to the pubis by means of a finger saw or other convenient instrument. When sawed through, the edges of the opening are seized and the jacket gradually opened and the body slipped out, when the cast will shut up like a piece of stiff stovepipe.



In some cases when recovery is nearly complete, it is advisable to remove the jacket, wash the body, and replace it, supporting it in place with a firmly applied roller bandage. But in the acute stages the patients invariably complain that the jacket is never so comfortable after it has been divided as when it remains whole.

The suspending apparatus has been objected to, because it makes too much pressure upon the axillary plexus of nerves, causing numbness of the arms and hands, and also raises the shoulders so high as to make the patient look uncomfortable. This objection can be overcome in small children by attaching a strip of adhesive plaster to the front and back part of the chest upon both sides, and allow it to rise above the shoulders in a loop so that it can be secured to the transverse iron bar. This suggestion was made by Dr. H. O. Marcy, of Cambridge, Mass., and I have found it to be of considerable practical value.

The *advantages* which the plaster jacket has over other dressings in the treatment of Pott's disease, are: first, that it affords a means by which positive absolute rest is secured, not permitting motion even in the slightest degree, so long as it is properly adjusted. The result is that consolidation takes place more readily than when motion is permitted by the daily change of apparatus. It is the same as it is in a case of fracture, where union is much more apt to be prompt by the use of a fixed dressing which secures absolute immobility than when an apparatus is frequently changed. Another advantage is that the local pressure attending the use of other apparatus is avoided. The chief way in which these patients have been kept straight, previous to the use of the jacket, has been by means of mechanical apparatus, which has made direct pressure upon the sides either of the projecting spinous processes, crowding them in, at the same time making traction in the opposite direction at other points for the purpose of making the spinal column straight. In other words, the fulcrum of pressure has been directly over the projecting part, and has produced pressure that interfered with the deeper-seated circulation, consequently interfered with nutrition, and retarded consolidation and recovery.

In a number of instances in which other apparatus had been used, although accurately adjusted, the disease had steadily progressed, and was progressing when the patients came under my observation, serious deformity having been developed at the end



of two, three, or four years, even after wearing Taylor's brace carefully adjusted; all dressings have been removed, and I have applied a plaster jacket with the happy result of arresting the further progress of the disease. In two such cases consolidation became perfect; in one at the end of four, and in the other at the end of six months, and the consolidation has remained. It may be said that those cases were of so long standing that they were nearly ready to get well of themselves, hence the cure cannot be attributed, really, to the assistance afforded by the plaster of Paris jacket. I do not mention them, however, because I regard them as test cases, but prefer to take the results obtained in those cases in which the disease has been treated throughout by means of the plaster jacket in order to prove its value, and as will be seen hereafter, the same favorable termination has been effected in every instance. Such results demonstrate the value of the plaster dressing in the treatment of the disease in its early stage.

Having recently understood that Dr. Joseph Bryan, of Lexington, Ky., had used plaster of Paris in this way in the treatment of Pott's disease prior to my first application of it, and not being able to find any published account of it, I wrote to Dr. Bryan, on May 23, 1876, asking for information upon the subject, and where I could find any published account of the same. He replied in a letter, dated Lexington, Ky., May 29, 1876: "Some time during the months of July or August, 1874, I applied my first plaster of Paris splint to the back for Pott's disease of the spine. . . . An account of my splint has never been published. . . ."

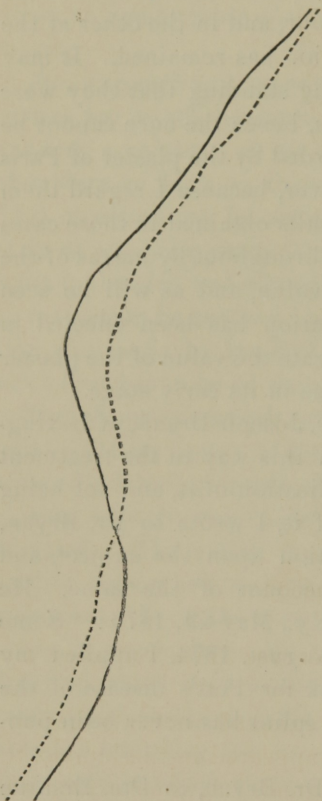
The case was shown, according to Dr. Bryan, to Drs. Erskine Mason, Stephen Smith, V. P. Gibney, and B. J. Harlan, who were much pleased with it, but as no account of it was ever published, and as none of the gentlemen mentioned seem to have been sufficiently impressed with its importance to bring it into practical use, I must at least claim priority in bringing it before the profession, and into general use, and was not aware of Dr. Bryan ever having applied it until I received his letter of May 29, 1876, or I should have given him credit for it in my previous publications upon this subject.

I have also applied the same plan of treatment to severe cases of lateral curvature, with the happiest results.

I append a few histories of some of the cases I have treated, to show its practical results.

*April 15, 1875.* CASE I.—Matilda Bennett, aged 13 years. Parents healthy. Two years ago child had measles, following this

Fig. 2.



had inflammation of right knee-joint and ankle; under treatment she has entirely recovered from these, and has now Pott's disease; 7th, 8th, and 9th dorsal vertebræ; 9th, very prominent; can be traced to no very distinct cause.

*Treatment.*—Taylor's brace was advised, and worn till Sept. 10th, 1875. When it was found that the pressure on the sides of the prominent vertebræ, caused by the uprights, had produced two quite large excoriations, it was removed, and she went without support for a week, so as to allow these sores time to heal. During this time she was kept in the recumbent position.

*Sept. 16th.* The plaster of Paris jacket was applied to-day, Sept. 16th, 1875, giving her perfect relief, but, owing to carelessness, it was applied giving her slight lateral curve, as seen in the cast.<sup>1</sup>

*29th.* Patient came to office to-day for the first time since the jacket was applied, and says that she would not exchange for all the iron braces in New York; she was urged to have it removed on account of the lateral curve, but would not.

*Nov. 2d.* Patient returned to-day feeling very well, and would not have the jacket removed, although advised to do so.

*Dec. 10th.* For the first time she complained, saying that the jacket was getting too tight; it was removed and a new one applied, giving perfect relief and a very perceptible improvement in her position.

*May 1, 1876.* She has worn the jacket without removal since Dec. 10th, and seems perfectly cured, but refuses to have it removed.

<sup>1</sup> This cast was presented to the Association, but has not been engraved.



Fig. 3 gives a correct idea of her present position. I regret that I have no photograph of her before the "jacket" was ap-

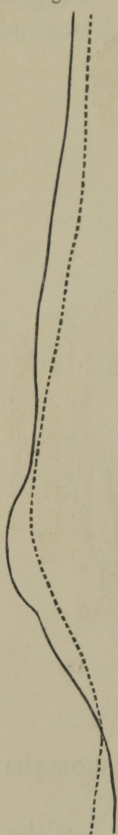
Fig. 3.



plied, but a comparison of the two curved lines will show the difference in her deformity.

CASE II.—John Jordan, aged 5 years, of perfectly healthy parents. In Jan. 1873, Pott's disease appeared in the lumbar region, for which no cause could be assigned. A wheel crutch was used until April in the same year. In May, 1874, a raw-hide jacket was fitted to the child, which gave great relief. The child was again seen in 1874, when he looked well. He continued to run about until June 4, 1875, during which time he had outgrown his jacket, which was removed and a plaster of Paris jacket applied. The child was held out as straight as possible by two assistants pulling one from the shoulders and the other from the ankles, a flannel shirt having been adjusted to his body, then a bandage saturated with plaster of Paris was carried around the pelvis and up to the axilla. The plaster dried readily, and the child was sent home feeling perfectly comfortable. I was sent for that evening in great haste, the mother saying he could not "lay or sit," and found him suffering from too great compression

Fig. 4.



of thorax. I therefore made an incision of about three inches from the top through the plaster, which gave instantaneous and perfect relief. This dressing was worn until July 26th, when it was found that a fold in the shirt had produced uneasiness. It was then taken off, and a slight abrasion over the crest of the left ilium discovered. The child came to the office on the 30th, when the abrasion was found healed, and was told to return the next day, when the dressing would be re-applied. July 31st another dressing was applied, the child being placed in the sling, the body being the extending power. The plaster of Paris was applied as before. After the plaster had dried, the child walked about the office, feeling very comfortable. On the following Tuesday he went on an excursion.

*Sept. 22, 1875.* Was present at the clinic; his jacket, that had been applied July 31st, was removed. The boy could bear concussion even when the instrument was off without pain, and appeared to be perfectly well, the dorsal and lumbar vertebræ being ankylosed with but slight deformity, as seen in photographs (Figs. 5 and 6). Another plaster jacket, however, was applied (before the class) to guard against any possible accident. Nov. 1st, jacket sawed open and removed. Boy apparently well, firm consolidation having taken place. He is allowed to wear his jacket as a matter of convenience to satisfy himself, although not necessary.

*Jan. 1, 1876.* Perfectly well, and needs no support, as seen in photographs (Figs. 5 and 6).

*June 6, 1875.* CASE III.—Minnie O'Brien, aged 3 years. Parents healthy, child very well developed, always healthy till November, 1874, when she fell out of the arms of her aunt down eleven steps and was so severely hurt that she could not stand. In a few days she began to complain of pain in her stomach. Mother examined it and found it very hard and swollen. The child has not been able to stand erect since; the mother states that she was always comfortable when lifted by the arms; three months ago a small lump appeared in the lumbar vertebræ, about the size of a hickory nut. July 28, 1875, child brought to office,



Fig. 5.

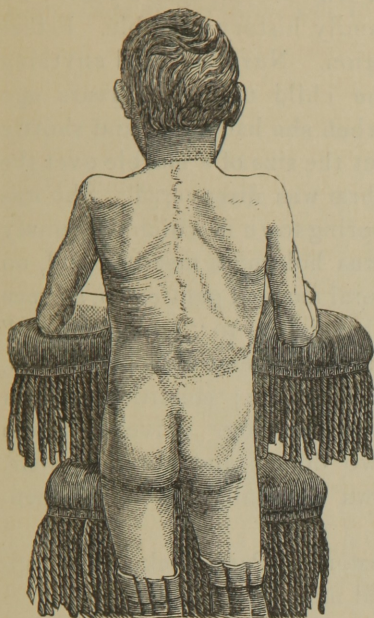
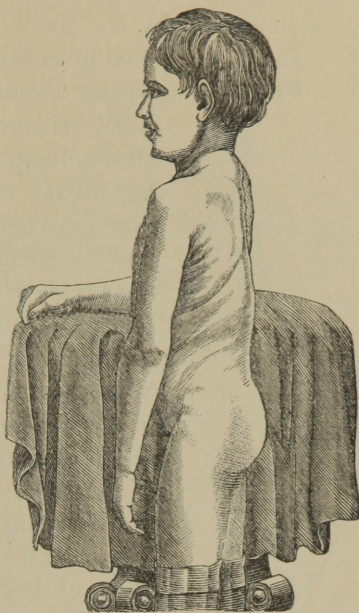


Fig. 6.



examined and found to have Pott's disease. Dark line shows deformity while standing, dotted line during suspension (see Fig. 7).

*Aug. 4.* Plaster of Paris dressing was applied, since which time child has been perfectly comfortable and free from pain.

*Sept. 1.* Child complained of pain for a few days; jacket removed, found a small abrasion from a fold in shirt.

*5th.* Abrasion healed, child redressed.

*Oct. 7.* Child returned, having been in the country four weeks, very much improved in health.

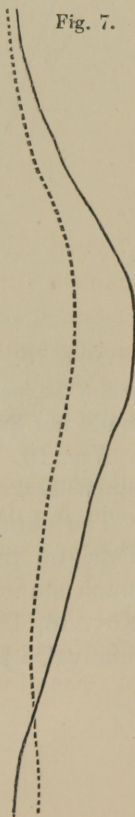
*28th.* Jacket removed, child complaining of its being too tight.

*29th.* Jacket renewed, child very comfortable.

*Jan. 20, 1876.* Jacket reapplied; child much improved; can stand quite erect without support when jacket is removed.

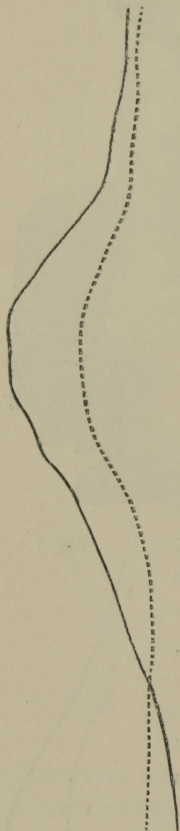
*May 10.* Perfectly well, and but very slight deformity.

Fig. 7.



*April 30, 1875.* CASE IV.—Eliza Ann Moyer, aged 9 years; St. Catharines, sent by Dr. Mack. Family history passable. Father

Fig. 8.



died of consumption. Never noticed anything wrong about the child until two years ago last Christmas, when she had a fall, and shortly after a lump about the size of a marble over the last dorsal vertebræ was discovered. She was taken to a neighboring town in which the county medical society was holding a meeting, and, on the advice of several medical gentlemen, a brace was made somewhat similar to "Taylor's brace" and applied. But the disease still progressed. Was then brought to me; condition as seen in dark line while standing. Five vertebræ are involved—two dorsal and three lumbar. Dotted line shows deformity during suspension (see Fig. 8).

*April 30.* Plaster of Paris jacket was applied, giving child most perfect relief.

*August.* Uncle states in letter that he and family physician have been able to remove and reapply the plaster when necessary, giving the child perfect comfort.

CASE V.—Maria Louisa Diago, aged 10 years (niece of Dr. Zayas, of Cuba). Born of healthy parents, and always healthy. Fell when six years of age, and hurt her back. In a few months deformity developed, and is now as seen in photograph, although she has constantly worn an iron brace (Fig. 10).

*Sept. 10.* Dark line shows deformity when standing, dotted line when suspended (see Fig. 9). Applied plaster of Paris, which made her quite comfortable, and she could walk without support.

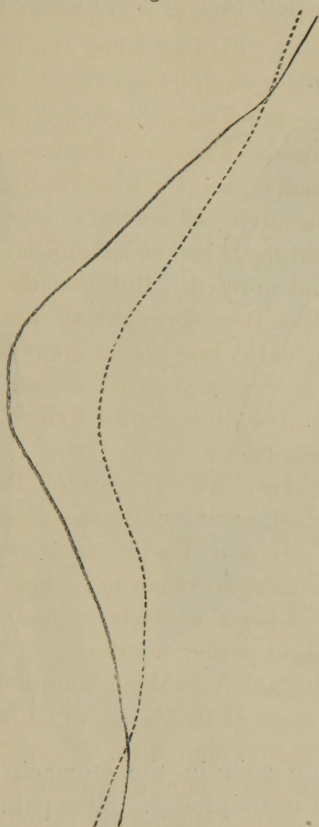
*Nov. 16.* Has gained flesh. New jacket applied. Deformity much less.

The child left for Cuba, Nov. 20th, 1875, and I saw her in Cuba, on the sugar estate, in Jan. 1876, in perfect health, and much stouter. The same jacket was on her which I applied, Nov. 16, 1875, but she was growing so large that it required removal. Before taking off the plaster jacket, Dr. Zayas had the



annexed photograph taken (see Fig. 11). (The profile should have been taken on the other side to correspond with the other picture.)

Fig. 9.



The following cases are good illustrations of the advantage of the plaster of Paris jacket over the Taylor brace. The previous history in each case is copied from my note-book, as they were taken at the time they first presented themselves, and the results of the treatment are from letters of the parents:—

CASE VI.—Hattie A. Myrick, aged  $4\frac{1}{2}$  years, came under my care Nov. 11, 1872. Parents healthy; three years ago fell from second story of a house to the ground, striking upon her nates. She apparently experienced no injury at the time.

In Jan. 1870, was quite sick with inflammation of the bowels (the physicians attributed it to her eating bitter almonds). This

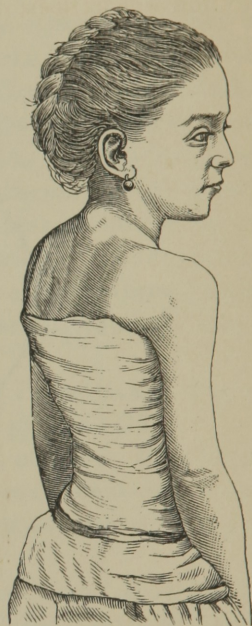
illness continued two months, and for a year she remained feeble.

In the spring of 1871 there was a time (about six weeks) when she did not use the left foot at all, owing, it was thought, to a sprain.

Fig. 10.



Fig. 11.



About a year ago pain in the stomach was noticed, which gradually increased in frequency. This pain was aggravated by jolting, riding, etc.

Last winter she walked, leaning the hands upon the hips. Was treated for worms and for some kidney trouble. About the end of August a prominence was noticed upon the spine, and she was at once ordered to lie still in bed.

Present condition, Nov. 11, 1872.—Projection of tenth, eleventh, and twelfth dorsal vertebræ.

*Treatment.*—Taylor's brace. Rest on back in bed.

Jan. 21, 1873. Greatly improved. Can bear slight pressure on head without pain.

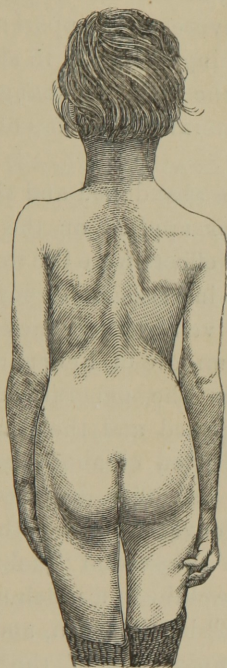
Oct. Still improving, but has grown so much that brace has to be lengthened.

Dec. 17, 1875. Last summer was allowed to play croquet and



take much more exercise than before, as she had improved so much. Last fall was noticed to be losing strength, and complained of pain in her back. Brace has caused excoriations over projecting vertebræ which have become much more prominent; has also slight lateral curvature to the left. To-day, Dec. 18, 1875, applied plaster dressing after extension by suspension. Condition was as seen in Fig. 12.

Fig. 12.



The result of the treatment, as well as the comparison of the two methods of giving support to the spine, viz., "Taylor's brace," and the plaster of Paris jacket, are well described in the following letter from her father, dated

FORT HAMILTON, N. Y., June 1st, 1876.

Dr. L. A. SAYRE, No. 285 Fifth Avenue, N. Y.

*Dear Doctor:* I have the satisfaction to report a decided improvement in the condition of my daughter Hattie, under treatment for spinal curvature, angular and lateral, by application of the "Plaster of Paris Jacket."

As you will recall, she was placed under your care in Nov. 1872, a "Taylor's brace" was ordered and applied on the 15th, which she continued to wear until early in Nov. 1875.

Her condition during the "Taylor brace" treatment may be briefly stated as a steady improvement for about a year, then retrograding, which was checked by putting her on her back, and after a while lengthening and re-adjusting the brace; a new, but slow, improvement until late in the summer of 1875, then a decided and rapid deterioration, an increase in the lateral curvature, and the appearance of a severe pain apparently in the side, at first evident only when turning suddenly in sleep, but soon displayed on the slightest jar to the body, or change of position, followed by a rapid decline in general health, loss of strength, and a highly nervous state.

The "brace" was then abandoned and the "jacket" substituted.

The first "jacket" was applied on the 18th of December last. The first and immediate effects were the total disappearance of the pain, and an apparent increase of strength, due, I presume, of course, to the support given by the "jacket." This "jacket" was worn until about the middle of February, during which time a steady improvement in the general health of the child was noticed, when it was opened and the skin found to be in good condition. During a period of about two weeks the "jacket" was kept in place by use of a bandage; it was almost daily removed and the parts covered by it bathed.

On the 7th of March the second "jacket" was applied, so successfully as to place the child in a much more erect position than formerly; that "jacket" is still worn, and the result is a decided improvement in the appearance of the patient. She is much stronger, quite free from nervousness; a constant check is necessary to prevent her from gratifying her natural inclination to exercise; a marked improvement, especially during the last two or three weeks, is shown in her figure; the head, inclined to droop, is carried more erect; the right shoulder, formerly badly dropped, is assuming its natural position. In a word, her condition, under the present treatment, is in my opinion rapidly improving, satisfactory and highly promising.

No marked inconvenience from the use of the "jacket" is noticed; the breathing is natural, except after an extra exertion, when short breathing is perceptible. Irritation of the skin, sometimes complained of in hot weather, is allayed by allowing



the child to draw in her breath and then moving the under garment up and down under the "jacket."

In my opinion the advantages of the "jacket" over the "Taylor" or any other "brace" consist in the uniform support of the "jacket" to the whole of the upper portion of the body; its inflexibility and the freedom allowed to the shoulders. The straps of the "brace" depress the shoulders, giving an unnatural appearance to that part of the body, and, it appears to me, calculated to effect a permanent injury.

Signed,

Very truly,

JNO. R. MYRICK,

*Capt. 3d Artillery, U. S. A.*<sup>1</sup>

CASE VII.—Charles Woodworth, aged  $3\frac{1}{2}$  years, Fort Washington. Came to me Nov. 20, 1875. Fell down seven steps upon a hard flagstone about six months ago; in a few months complained of pain in stomach, etc. He was examined by Dr. S. A. Raborg, who diagnosticated "Pott's disease," which I confirmed. Plaster of Paris applied Nov. 21st, 1875.

*Dec 31.* Plaster jacket renewed; child perfectly comfortable. This jacket was worn till March 27, 1876; when it was removed a little redness was found over the eleventh and twelfth dorsal vertebræ, which was cob-housed with adhesive plaster, and a jacket of plaster of Paris was applied, which gave perfect relief, and enabled him to walk well without support.

*May 20, 1876.* "Jacket" removed, child much improved in flesh and strength; can stand erect when "jacket" is removed, and bear quite firm pressure on the head while standing. Apparently cured, but another "jacket" was applied as a precaution.

The following case is interesting as showing that any physician can apply the treatment who chooses to do so, and thus save his patient the expense and trouble of being taken to some particular specialist:—

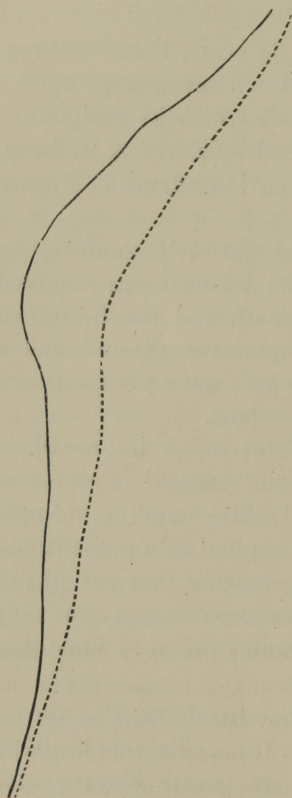
CASE VIII.—Annie D. Stewart, of Chambersburg, Pa., aged 8 years, was brought to me on the 29th Oct. 1875. Parents healthy; child always healthy till five years of age; while playing with other children she was pushed from a curb-stone, falling on her back among a lot of loose cobble-stones. A few days after this she complained of more or less pain about the abdomen and right

<sup>1</sup> January 15, 1877. Entirely well.

side; mother states that she was not near so lively as before the fall, would cry out at night, could not lie on her back without great pain, was more comfortable while lying on her stomach. Was examined by two physicians, who could not decide on the trouble. In March, 1875, the father accidentally put his hand on her back and found a lump about the size of a hickory-nut; was then taken to a physician who pronounced it Pott's disease.

Treated with a Taylor's brace. Father thinks the back is more crooked than before the use of the brace. Oct. 19, 1875, my assistant, Dr. Robert Taylor, applied plaster of Paris jacket, which gave perfect relief; child made the remark that this was better than all the iron braces.

Fig. 13.



Dark line shows deformity while standing; the dotted line when suspended (see Fig. 13).

In February, 1876, I received the following letter from the attending physician:—

Chambersburg, Pa. "Mr. Stewart and I succeeded in reapplying the plaster bandages to his little daughter, who I am happy to say is doing finely. Her health has been very much better since her visit to you than it had been for years. If you had done nothing else for surgery than adapting the plaster apparatus to any curvature, you would be entitled to the gratitude of the profession. When I consider how many children you will rescue from deformity and physical and mental suffering by means so simple and inexpensive that the poorest people and the most inexperienced physicians can avail themselves of it, I feel as if we must in-

clude you among the great benefactors of the race. Had you lived in the days of Pope, you would be immortal.

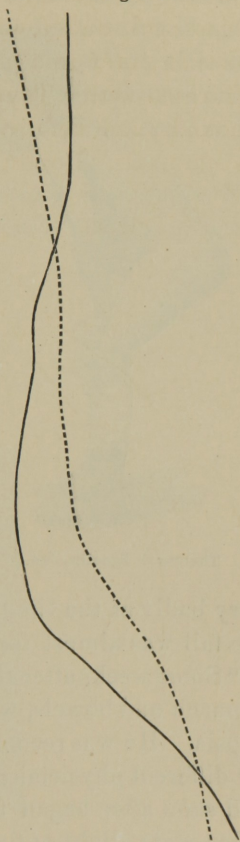
Gratefully yours,

SAM'L G. LANE, M.D."



*Jan. 12, 1876.* CASE IX.—Theresa C. Egnelin, aged 5 years. Father died of phthisis; mother living and healthy. Child always strong and healthy till last fall. Mother states that while she was playing on a cart with other children, she fell to the ground, striking on her back. A short time after this she began to complain of pain while being dressed and undressed, and also to stoop while walking. Was taken to Dr. Yale in October, 1875, who pronounced it "Pott's disease" lumbar vertebra, and advised Taylor's brace. Was brought to me Jan. 12, 1876, and diagnosis confirmed. Dark line indicates deformity while standing; dotted line after suspension (see Fig. 14). Photograph, Fig. 15, shows position when standing. Plaster of Paris jacket applied, which gave perfect relief. When the plaster had set, she walked around the office without any support whatever, which mother states she has been unable to do since the time of the injury. This jacket was worn till April 10, 1876, when she began to complain of its being tight; it was then removed, and as there was a slight excoriation on the side of the vertebræ produced by a strip of adhesive plaster, she was not redressed till May 2d. Mother states that the child is improving and cannot get along without the jacket.

Fig. 14.



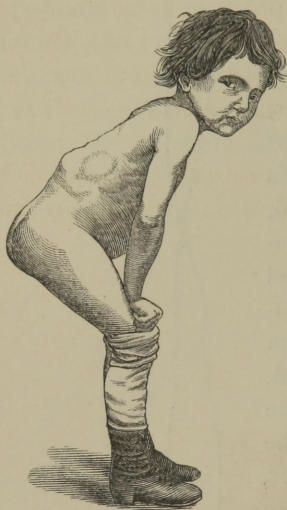
*May 23.* As she has complained of some pain over hips, this jacket was removed, and a new one applied giving perfect comfort. Her present condition is seen in Fig. 16.

CASE X.—Geo. W. Curtis, aged 6 years 6 months, was brought to me 1st Feb. 1876, for hip-disease. His peculiar walk and stiffness of the spine led me to suspect Pott's disease.

Upon stripping the child and examining his spine, my suspicions proved to be correct. There was a marked prominence of the 8th, 9th, and 10th dorsal vertebræ, with intense pain when pressure was made on the sides against the ninth ribs.

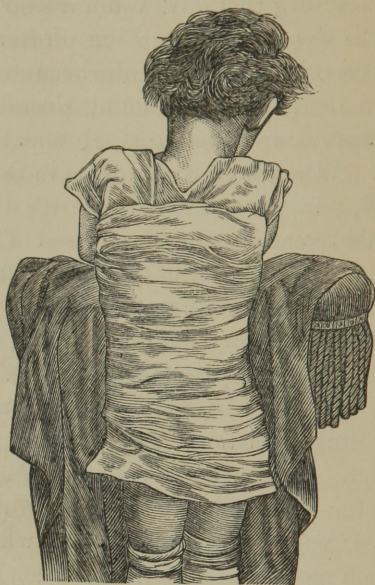
He had fallen out of a bed the summer before when in Switzerland, striking his back against the edge of a crib, which hurt him

Fig. 15.



Theresa C. Egnelin, Jan. 12, 1876.

Fig. 16.



Theresa C. Egnelin, May 23, 1876.

very badly at the time; but as the pain passed off in a few days the fall was almost forgotten.

"Some weeks after this fall he began to complain of pain in his stomach and bowels, which was attributed to indigestion, and dyspepsia. He was recommended to the different waters of Germany by different physicians. In the autumn, he had another severe fall, and soon after began to complain of pains in one knee. These pains were slight at first; but increased week by week, until he began to have great difficulty in walking, his legs seemed to drag, and he had great difficulty in raising his feet from the ground. He complained very much of feeling tired, and seemed to be losing his strength."

I suspended him in the sling from the armpits, chin, and occiput; and when his feet were swung clear from the floor the spine became *almost* perfectly straight; there was only a very slight prominence over the 9th dorsal spinous process.

His flannel shirt, which fitted him quite snugly, was pulled down firmly until it fitted him like a tight glove.

The plaster of Paris bandage was then applied smoothly from

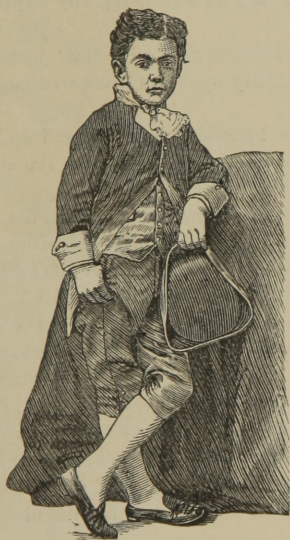


hips to axillæ, and when firmly dried, he could run without any dragging of his legs, and without any pain in his knees. The pain in his stomach and bowels and all symptoms of indigestion ceased from that day, and have not returned.

The short "catching" respiration, and the peculiar stiffness of his head and neck disappeared the moment his trunk and spine were firmly secured, and his breathing was deep and full, although entirely diaphragmatic. His health and strength improved daily, and in a month he could exercise and walk almost as well as his brother.

He attended a "fancy dress ball" in costume, as seen in Fig. 17, and no one suspected that he had Pott's disease, or could

Fig. 17.



detect any difference in his movements from the other children. I have repeatedly urged him to let me remove the "jacket," as I was anxious to see what progress was making, and was also anxious as to the condition of his skin, after so long a confinement in this impervious apparatus; but he will not consent. He says he is "afraid that I cannot fix him so good next time, and that he is now perfectly comfortable." He has now had it on four months, and refuses to have it removed.<sup>1</sup>

<sup>1</sup> Since my report was made in Philadelphia, the little fellow has returned from their country seat at Long Branch, and "wants his 'jacket' taken off, as it is too tight."

June 12, 1876, I removed it in the presence of Prof. Darby of this city; Drs.

CASE XI.—Thomas Cochran, aged seven. The mother states that he is a very nervous and excitable child. When three years old he fell down a flight of steps, since which time he has complained of pain in his stomach, sometimes in his back. The mother noticed a bunch upon his back while he was still confined to his bed. This bunch was painful. Has been under treatment by iron braces for four years, and has gradually grown worse. Has been to a Philadelphia hospital for ruptured and crippled, Forty-second Street, and Dr. Sweet, of Newark, has seen him.

Benham, of Pittsburgh; Formento, of N. O.; Logan and Willman, of Georgia; Cullen, of Richmond, Va.; and some others who happened to be in the office at the time.

None of the gentlemen present had the slightest suspicion that he was suffering from Pott's disease, or that he was using any support, until his clothes were removed.

When stripped, his form was perfect with the "jacket" on, and at the request of Dr. Darby, he jumped firmly upon his heels without the slightest evidence of any pain.

Firm pressure could also be made upon his head and shoulders with the same result. Four months previous he could not bear the slightest jar upon his heels, or pressure upon his head.

On sawing down the "jacket" and removing it, his skin was found to be perfectly healthy. But on turning him over to examine his spine, fortunately we found a black spot the size of a finger-nail over the projecting ninth dorsal spine. This was like a hard corn, and was readily lifted off by the finger-nail, and the integument underneath was sound. This place was still a little tender when strong pressure was made upon the sides of the ribs, or on crowding upon the head and sacrum.

I say "fortunately" we found this one tender spot, for in the language of one of the surgeons present, "if I had not done so, they would all have thought that nothing was the matter with him, and that he had never had the disease at all; but the difference in his actions when the 'jacket' was removed satisfied them that I was correct." I have a letter from his mother dated

OCEAN CREST COTTAGE,

DR. SAYRE:

LONG BRANCH, July 6, 1876.

*Dear Sir:* . . . . You put on your "plaster jacket" on the 1st of March, and from that time George has been steadily improving, and, strange to say, he has never had a single pain in his knee since. About two weeks ago the bandage was changed for a fresh one, and the skin was found to be in a perfectly healthy condition.

George has never complained of the "jacket" hurting him, or being uncomfortable in any way. . . . .

Very gratefully

Your sincere friend,

ELIZA M. CURTIS.<sup>1</sup>

---

<sup>1</sup> January 15, 1877. Entirely well.



His present condition, March 16, 1876, is: tolerably well nourished, but unable to stand without support; posterior curvature of seventh, eighth, and ninth dorsal vertebræ. The eighth projecting very prominently (see Fig. 18). Great pain when pressing on head and sacrum. When suspended, the projection diminished very perceptibly.

*March 16, 1876.* Plaster of Paris jacket was applied.

*May 20.* Boy returned to have jacket seen to. Has been perfectly comfortable since last date. Has improved considerably.

Fig. 18.

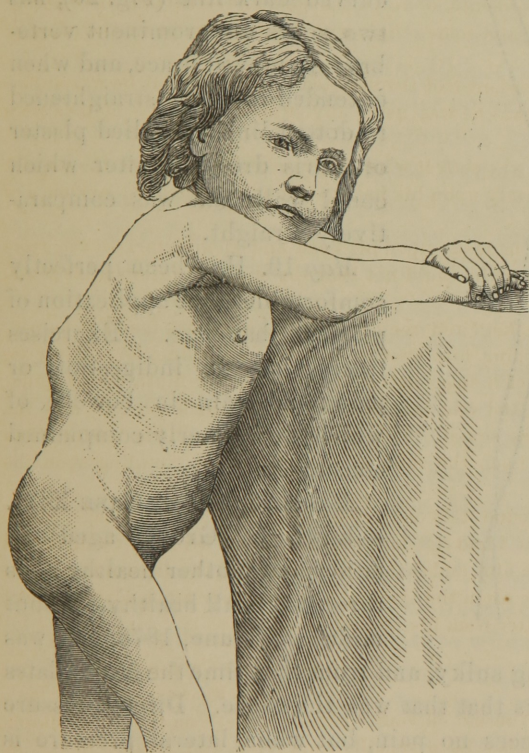
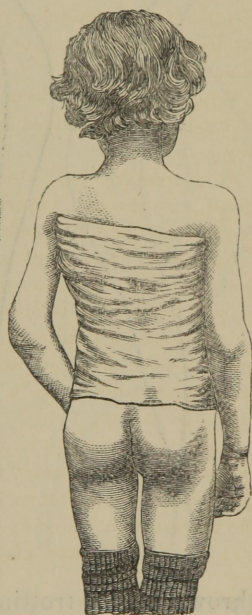


Fig. 19.



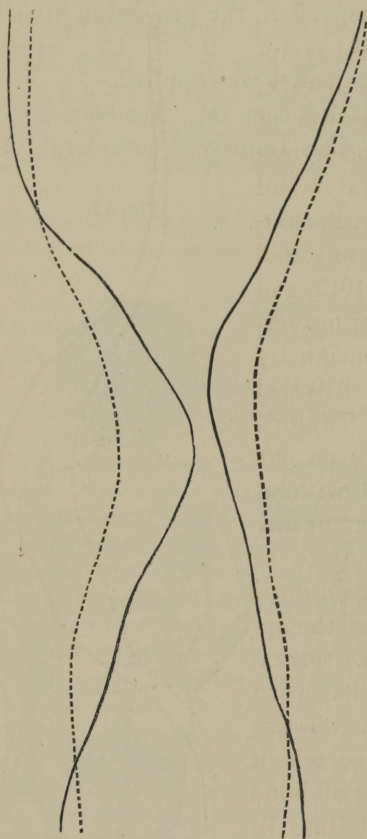
Jacket not disturbed, as it is still in good condition, as seen in photograph annexed, and the boy exercises freely without pain or inconvenience (see Fig. 19).<sup>1</sup>

<sup>1</sup> Jan. 8, 1877. Perfect consolidation with scarcely perceptible deformity when naked, and imperceptible when dressed. Is in robust health, and very active.

*Feb.* 10, 1876. CASE XII.—Wm. A. Lyon, aged 4 years, 127 Morton Street, Jersey City, sent by Dr. Craig, with Pott's disease,

Fig. 20.

Fig. 21.



8th, 9th, and 10th dorsal vertebrae of 18 months' standing caused by falling down stairs. Taylor's brace applied July 20th, 1875, has worn it ever since. At that time deformity very slight (as the parents say). Present condition as seen in curved dark line (Fig. 20), has two sores on prominent vertebra. Removed brace, and when extended in sling straightened to dotted line. Applied plaster of Paris dressing, after which could walk and was comparatively straight.

*May* 10. Has been perfectly comfortable since application of plaster bandage. Exercises freely; has no indigestion or pain; no pain in bowels, of which he formerly complained constantly.

*March* 27, 1876. CASE XIII.—Edith S. Groot, aged 7; father and mother healthy; has three sisters all healthy. About middle of June, 1875, she was

thrown from a trotting sulky, and from that time the father dates the disease, and knows that that was the cause. Direct pressure on the knuckle produces no pain, but when lateral pressure is made intense pain is produced.

The solid line (Fig. 21) shows deformity when standing; dotted line when suspended. Plaster of Paris jacket applied, with perfect relief. Child brought to me by her father, Dr. C. A. Groot, of Westbury, Wayne Co., New York.

Have since received a letter from Dr. Groot saying that he had been able to reapply the jacket with perfect success, and that the child is improving.



*March 4, 1866.* CASE XIV.—Mary S. Ward, aged 4 years, Bloomfield, N. J., was brought to me March 4, 1866, with the following history. Fell out of a child's carriage when 22 months old. Has always been delicate but never sick.

Six weeks after fall, parents noticed symptoms of lassitude, and disinclination to walk, and in six months she lost all power of walking, when a swelling in her back was discovered. Was bathed in salt water and put on cod-liver oil by advice of Dr. Parker. At the present time she is unable to stand. Has a posterior curvature of 9th, 10th, and 11th dorsal vertebræ. Very tender on vertical pressure, and easier by extension by the feet or lifting her by the arms. Advised horizontal posture and applied Taylor's brace, May 20, 1868. With brace on can walk with assistance, and stand without resting her hands upon her knees or any other support. Curvature not quite as prominent. Child was not seen again until April 5, 1876, when she presented the appearance shown in Fig. 23. The curvature has increased, although she has worn the supporter constantly. An abscess formed in the back some months ago, which was opened. Several small pieces of bone have escaped. Dark and dotted lines in Fig. 22 show diminution of curvature when suspended. Applied plaster jacket, cutting a fenestra over the abscess, with perfect comfort. May 22, 1876, child has improved very much since jacket has been applied. Abscess has been closed for three weeks. Position as seen in Fig. 24. Jacket removed, and a new one applied without fenestra.

The following letter from her father, the Rev. Dr. Ward, will give a very good idea of her present condition, as well as the advantages of the "plaster jacket" over the "Taylor brace."

Fig. 22.

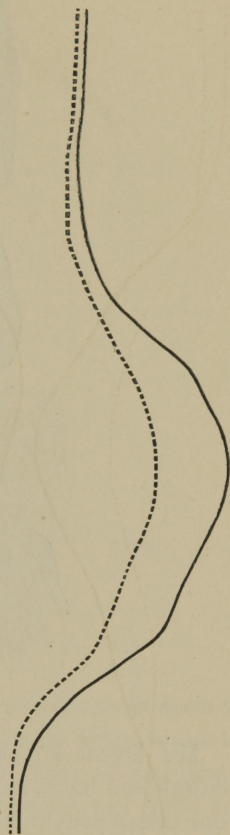


Fig. 23.



BLOOMFIELD, N. J., June 1, 1876.

MY DEAR DR. SAYRE: Find herewith a photograph of my daughter's back, supported by your plaster corset. You have the one taken previously. She has, you know, worn mechanical braces (Dr. Taylor's) since she was about three years old, until the appearance of a cold abscess on her back, and she could wear them no longer. She is now nearly twelve. Your plaster corset has been a great comfort to her, and we think is proving a permanent benefit to her; certainly she has improved remarkably since you applied it. Several reasons commend your corset to us over the brace.

1. By your pulley the form is lifted, near as may be to its erect position, and the corset retains it in its place. Mary is an inch taller at once by it.

2. The corset so completely fits the form as to distribute its support evenly about the whole body, thus relieving the spine.



Fig. 24.



3. It proves comfortable to wear. Its close adjustment seemed confining for a few hours, but after a night's sleep Mary began to speak of the great comfort it gave her—and then of her gratitude to you—and from that time on her pleasure has been enthusiastic in it. She breathes easily and naturally with her diaphragm, without any of that short, jerking respiration she had before it was applied, and has been very unwilling to have the corset removed on any consideration; she has worn it now more than six weeks unchanged, and in her gratitude wants everybody to know about it.

4. The corset can be removed and replaced to meet any contingency or change which may require it, and without so large an expense as to be burdensome to those of moderate incomes.

From the day you first applied it Mary has improved in form, in strength, in agility, and in healthful appearance. We have prepared a swing on the principle of your elevator pulley, in which Mary amuses herself daily, and we think with benefit.

In conclusion let me reiterate the desire of my daughter, that in some way you should let the world know the comfort and benefit secured to the afflicted by this method of treatment.

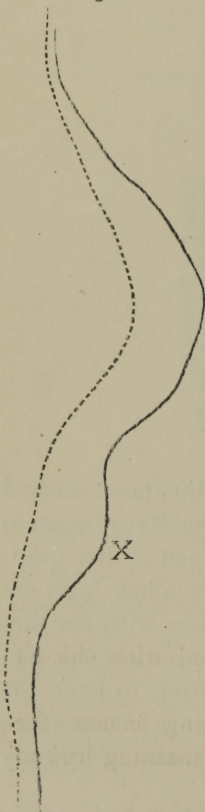
Very gratefully yours,

JOHN WARD.

DR. L. A. SAYRE.

CASE XV.—Nellie B. Molloy, aged 5, 2202 Third Avenue, New York, was brought to me April 13, 1876. Has always

Fig. 25.



been healthy until about one year ago, when she fell upon her hands and knees. The day following she was seized with a severe pain in the stomach. This confined her to bed, and a physician was called in, who examined her, but said nothing had developed. Remained in bed three days on account of the pain experienced when standing or sitting. After this she got up, presenting nothing unusual, except a stiff manner of walking now and then, which came and went without any apparent cause. During March, 1876, she gradually became worse, and was sent to me by Dr. Farrington, of Harlem, in the following condition. Large, well-developed child, walks with a peculiar gait. There is a prominence in the lumbar region, which is very painful upon concussion and compression, and which is diminished by extension. Has also hip disease, first stage, of right side.

*April 13.* Plaster of Paris jacket applied to trunk and short hip splint applied to right thigh with perfect relief, and she could walk well immediately.

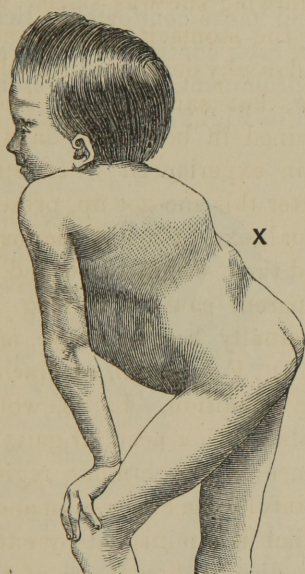
*May 22.* As the child is going to the country for the summer, a new jacket was applied, and new plasters and bandages to leg and thigh. As soon as the plaster had become set she walked with perfect ease, but when the jacket was removed she could not walk a step or stand without support.

*April 17, 1876.* CASE XVI.—Anthony Ryan, aged 8, 84 Tenth Avenue, of healthy parents, and always strong. When



two and a half years old had a slight fall from a bed. Noticed trouble in back almost immediately. Was taken to Dr. Knight's Hospital in September, 1870, and wore a brace from October, 1870, ever since. Notwithstanding this, curvature has gradually increased until it is as represented in (Fig. 25) dark line. Opposite **X** is a small opening, into which a probe passes three and three-quarter inches to the right, two and a half inches to the left, one and a half inch in an upward and downward direction. Dotted line in Fig. 25 is that of suspension; dark line of standing.

Fig. 26.



*April 18.* Opened abscess very freely; dressed with oakum and balsam Peru.

*19th.* Applied plaster of Paris dressing, cutting fenestra for the escape of pus, giving him perfect relief, and enabling him to walk without support.<sup>1</sup>

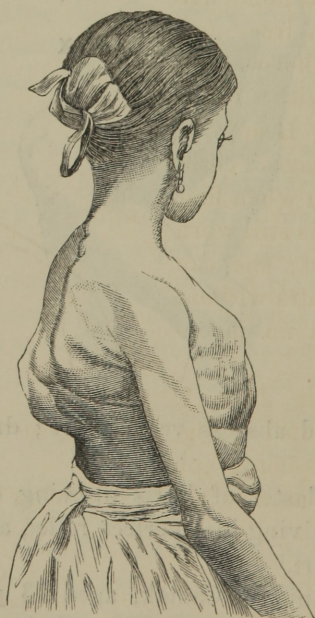
**CASE XVII.**—Annie T. Camak, aged 13 years, Athens, Ga., was brought to me March 16, 1876. Father and mother dead; cause of their death unknown. The following history is obtained from her aunt: "At 5 years of age she had a fall, followed by

<sup>1</sup> Jan. 8th, 1876. Has continued to improve; abscess healed in November. Still wearing the plaster jacket, but without fenestra.

intense pain in the back and bowels; this continued for some months, when the pain ceased; soon after a bunch appeared on her back. She was taken in Aug. 1868, to a Dr. Mann, of New York; he rubbed the spine, and made a brace, which, however, the child could not wear constantly, as it gave her great pain. Then a Banning's brace was procured, but this seemed to press the breast out so much that it was thrown aside. Kolbé's brace, of Philadelphia, was then recommended, and worn for two years; an ulcer then appeared on each leg at the top of the thigh, which prevented any brace from being worn for some time.

*Oct. 1874.* Dr. Knight, of 42d Street, applied a brace which was much lighter and more comfortable than any before used, but the curve in her back continued to increase, and her breast bone become more prominent." Her present condition, March 16, 1876, is as shown in Fig. 27.

Fig. 27.



A fistulous opening exists on the right thigh just below Poupart's ligament, discharging quite freely all the time. The aunt says this opening has discharged constantly for four years; she also had a similar opening on the opposite side, but this has been closed for two years. A flexible probe passes into the sinus on



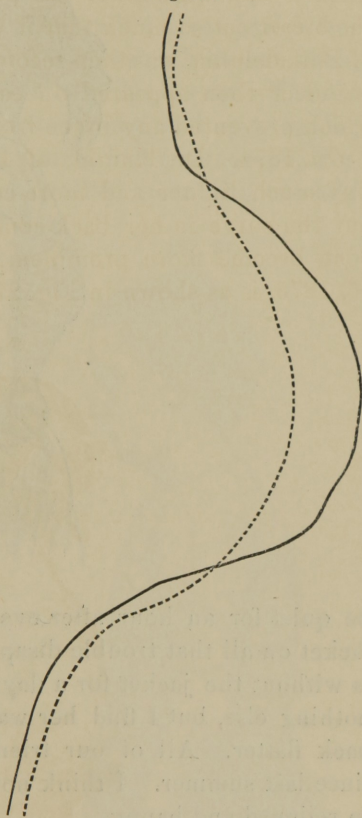
the right side below Poupart's ligament upward and backward eleven inches without touching bone.

The tracing of the back by the flexible lead tape, while standing, is represented by the dark line. The dotted line represents the tracing of the curve when suspended, March 16, 1876 (see Fig. 28). After suspension, the plaster of Paris jacket was applied and worn with perfect comfort till April 22, when it was removed on account of the child having measles. During the time of her wearing the jacket, the pain in the stomach after eating, which before had been a constant trouble, had not annoyed her at all, and her breathing was much freer and deeper when the jacket was on than when she was without it.

*May 12, 1876.* Reapplied plaster of Paris bandages; child much straighter than when first applied; this jacket is still worn with perfect comfort; she can run up and down stairs without support, and suffers no inconvenience whatever.

Present condition, June 1, 1876, is well represented in Fig. 29, taken from a photograph just sent me by her aunt, with the following letter.

Fig. 28.



GLEN RIDGE HOUSE,  
CORNWALL, June 1st, 1876.

DR. SAYRE.

*Dear Sir:* I write to tell you what a wonderful success you have made of the plaster jacket that you applied to my little niece; she finds it entirely comfortable and pleasant, sleeps and exercises in it without any difficulty whatever. She has worn a variety of braces of the best kind, but I think this the best

application. Before wearing the jacket she suffered greatly from dyspepsia after eating; no medicine seemed to relieve it; had to

Fig. 29.



be quiet for an hour after every meal; as soon as you put the jacket on all that trouble disappeared, but comes on again if she is without the jacket for a day. This relief would be enough if nothing else, but I find her waist longer and the bump on the back flatter. All of our friends here notice the improvement since last summer. I think now I am in the right path, and feel so relieved and happy.

Yours most sincerely,  
ANNIE CAMAK.

CASE XVIII.—Mary T. Brown, aged 26 years, 348 E. 32d Street. Mother died of phthisis; father healthy. Patient always strong and healthy till two years ago last winter, when she had a severe fall on the ice. Has never been well since, and the least cold would give her severe pain in the back and stomach. Since Jan. 1, 1875, has been unable to do work of any kind, or walk without assistance, it having taken her three hours to come from



home to my office, a distance of a quarter of a mile, she having to rest on each step and railing on the way. Patient states that pain is constant in her back, and at times very intense in her stomach. Condition as seen in Fig 30.

*April 8.* Applied plaster of Paris jacket, which gave great relief.

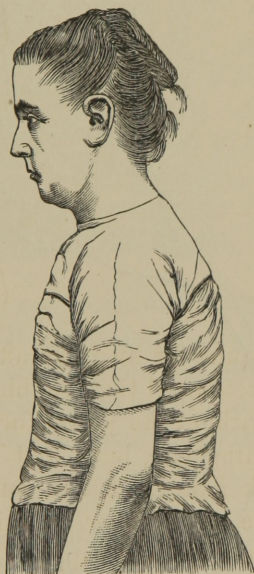
*26th.* Returned, saying that she could walk a great deal better with this jacket, but that it was not high enough on her back, and asked to have a new one applied a little higher up. The old one was removed, and a new one applied going well up to axilla; when dry, she walked a quarter of a mile, had photograph, Fig. 31, taken, and returned home, having walked more than one-half

Fig. 30.



Mary T. Brown, April 8, 1876.

Fig. 31.



Mary T. Brown, April 26, 1876.

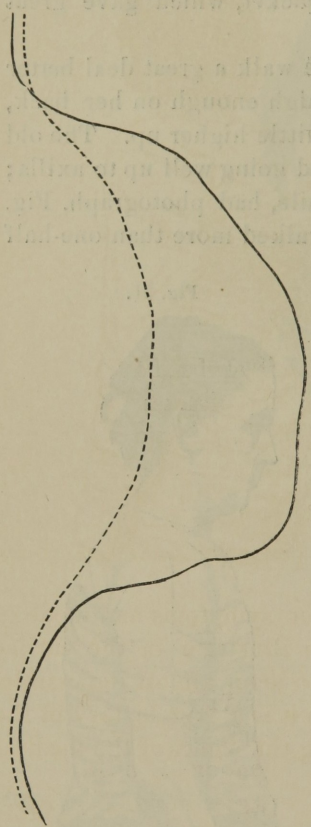
a mile inside of one and a half hours from the time this jacket was applied.

*June 1.* Returned, feeling very well, and without the slightest pain or discomfort whatever. Is able to do moderate house-work.<sup>1</sup>

<sup>1</sup> Jan. 8th, 1877. Can walk without support, and has but slight deformity; consolidation apparently complete, but advised to wear the jacket a few months longer for security.

*April 14, 1875.* CASE XIX.—Charles E. Webster, aged 19, Binghamton, N. Y. When about 3 years of age, first complained of pain in back. Does not know of any injury; was then placed

Fig. 32.



under care of a Dr. Wood, of Boston, and has been treated with corsets constantly until two or three years since. Curvature was then nearly about the same as dark line; corset was then left off. A year ago last fall, again noticed trouble in the spine; has since worn corset.

The dark line indicates his deformity while standing; the dotted line after being suspended five minutes (see Fig. 32).

While suspended I applied the plaster of Paris dressing with a piece running up under the occiput, which gave perfect relief.<sup>1</sup> His height increased three-fourths of an inch by actual measurement.

*April 26.* The plaster under occiput having cracked, the jacket was reapplied without head extension piece.

*May 17.* As the jacket causes pain over the hips, it was removed, and a new one applied, with pads over the anterior superior spinous processes.

The pads were removed when the plaster set, and he said that the jacket gave him perfect relief from pain. Patient returned to his home to-day.

By comparing the annexed photographs before and after the application of the plaster-jacket, the change in his curvature will be seen to be quite apparent (see Figs. 33, 34).

The following case is a very instructive one, as showing the importance of an early diagnosis before any deformity has oc-

<sup>1</sup> Since that time I have devised an apparatus for extension of the head, which is much more satisfactory, and which is fully described in the latter part of this paper.



curred, and yet a number of very eminent gentlemen examined the case without detecting the disease.

Fig. 33.

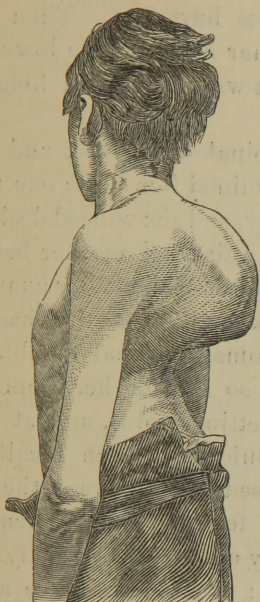
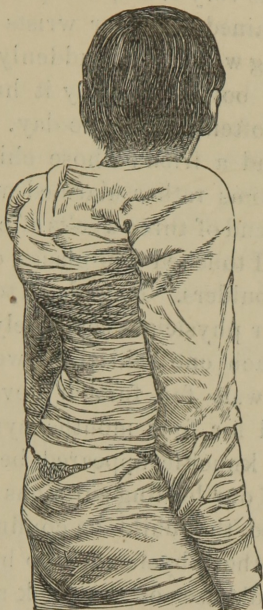


Fig. 34.



I think a careful study of the earlier symptoms and mode of examination, as I have endeavored to illustrate in the earlier part of this paper, would render such an error almost impossible.

I quote the mother's letter entire, as it is a type history of the majority of such cases, merely omitting the names of the medical gentlemen referred to.

No. 19 EAST 46TH STREET, NEW YORK, May 4, 1876.

DR. SAYRE: *Dear Sir*—According to promise I will try to give you a minute detail of the illness and treatment of my little girl up to the present time.

Florence Boyle is the second child of William F. and Fannie L. Boyle, of St. Louis, Mo. The parents and grandparents were particularly free from any bone or blood diseases. The other two children are unusually stout and healthy. Up to the time of her injury I never saw a more active, stout, healthy child. When two years and three months of age, on July 4, 1868, while playing on the stoop, she fell one step, and I think she fell across an iron

foot scraper, as she cried out as if in great agony; did not cry long, and went out again to play, but played with very little spirit, wanted to be held. The next day she had a slight fever and was very cross; complained of no pain. In the next few days complained that her wrists and ankles hurt her. Then when playing would stop suddenly and put her hands to the lower part of her bowels and say it hurt her; it would not last long, but occur often during the day.

I had a friend whose child had spinal curvature, and these symptoms rather alarmed me. I examined her spine one night, at the end of three weeks after the injury, and she winced decidedly when I touched two places, one at the waist and another between the shoulders. Next day I took her to town and had her examined by four physicians separately, neither knowing the other had seen her, each one said these were symptoms of spinal trouble, but must wait for further development, so I took her home and waited for four months, symptoms getting worse, and at last a small knuckle appeared between shoulders. Then I called in two of our leading surgeons; one advised use of a brace, the other advised that child be confined to bed for one year. Then went to another physician, who had recently come from Brooklyn, and made diseases of the back a specialty; advised his brace and to keep the child on her back too. I placed her under his care because this plan agreed with both the others, and at the end of ten months she was totally paralyzed from hips down, feet drawn back till they almost touched the calves of her legs; curvature much worse, and spot at waist much more sensitive. Leeches were applied at that spot, which gave perfect relief from all soreness. She never complained of pain anywhere, and was very fleshy while confined on her back. The Dr. then wanted to put both limbs in iron braces, but I could not approve of it, so took her out of his hands. She was paralyzed for three years. I next took her to Boston, where she remained a year; she was so much relieved that she could crawl, but not stand an instant, or walk. This new Dr.'s brace failed also to arrest the increase of the curvature; she still did not suffer. Becoming discouraged, I took off this brace. Her paralysis became worse until the end of three months, when she one day pulled up by the window and walked across the room, and has walked some ever since. She did not wear a brace for two years, walking and running around like other children, only bending forward terribly, the curvature getting



worse. Then I took her to a Dr. from Indianapolis, who applied his brace, which has been of great and positive injury to her; she has suffered a great deal this past winter; would have to take off the brace and stay in bed three or four days at a time. The muscles in back would swell up and be exceedingly sensitive to the touch.

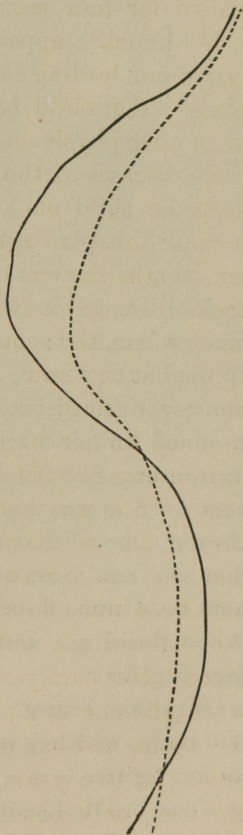
I sincerely regret I delayed so long coming to you. The improvement by to-day's treatment far exceeds the wildest hope I ever had of her recovery. The straightening of the curvature by this one "hanging up" is really just twice as much as I expected to have accomplished in three years' treatment. Whether you believe in prayer or not, I shall most certainly ask God's blessing to rest upon you and reward you eternally, as well as in this world.

FANNIE L. BOYLE.

*April 28, 1876.* CASE XX.—Florence Boyle (see Fig. 36). Dark line shows deformity while standing. Dotted line shows the decrease of the deformity during suspension (see Fig. 35). While the child was thus suspended a plaster of Paris jacket was applied, which did not give perfect relief; it was removed and a new one applied, but had to be removed, as it caused pain over the prominent points of spine. As there was a very sensitive point over the second dorsal vertebra, leeches were applied, with marked relief. A new jacket was applied on the 4th of May, and, as the disease was so high up, a Davis's head supporter in conjunction with it, affording perfect relief. Child walked two blocks, and can sit up, stand, and run round, which she had not been able to do for months. (See Fig. 37.)

*May 1.* She has continued to wear the last "jacket," in connection with the Davis's head support, without any discomfort. She has improved in flesh and spirits, has become rosy cheeked and playful; in fact, is so completely changed

Fig. 35.



as to attract the notice of all her friends. She was three-fourths of an inch higher by accurate measurement immediately after the suspension, and the "jacket" and "head rest" have retained it.

Fig. 36.

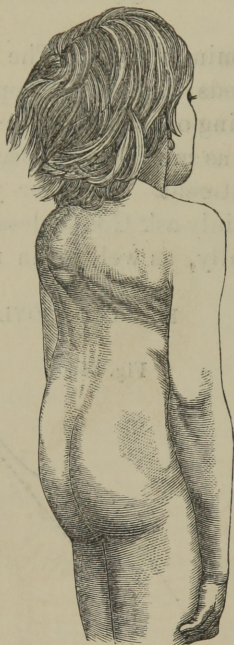


Fig. 37.



*May 15, 1876. CASE XXI.—Elvira Arango, aged 12 years. Father healthy; mother's history passable. Cause unknown. When eight years old complained of more or less pain about the spine. Noticed nothing till two years ago, when mother found a small knuckle about last dorsal and first and second lumbar vertebræ. She has been treated by the prone position more or less ever since the deformity was noticed, and the uncle, Dr. Arango, says "that the deformity has increased, notwithstanding she has been most of the time in the horizontal position." Present condition as seen in Fig. 39. Dark line indicates the curve when standing. Dotted line shows deformity during suspension (see Fig. 38).*

*May 20. Plaster of Paris jacket applied after suspension of the body, which gave perfect relief, and a marked improvement in her figure.*

*June 3. Has been perfectly comfortable since last date. Has*



taken a great deal of exercise, and has had no pain. Has menstruated for first time, and the mammæ have increased so much that the top part of the plaster had to be cut out to accommodate them. Position as seen in Fig. 40.

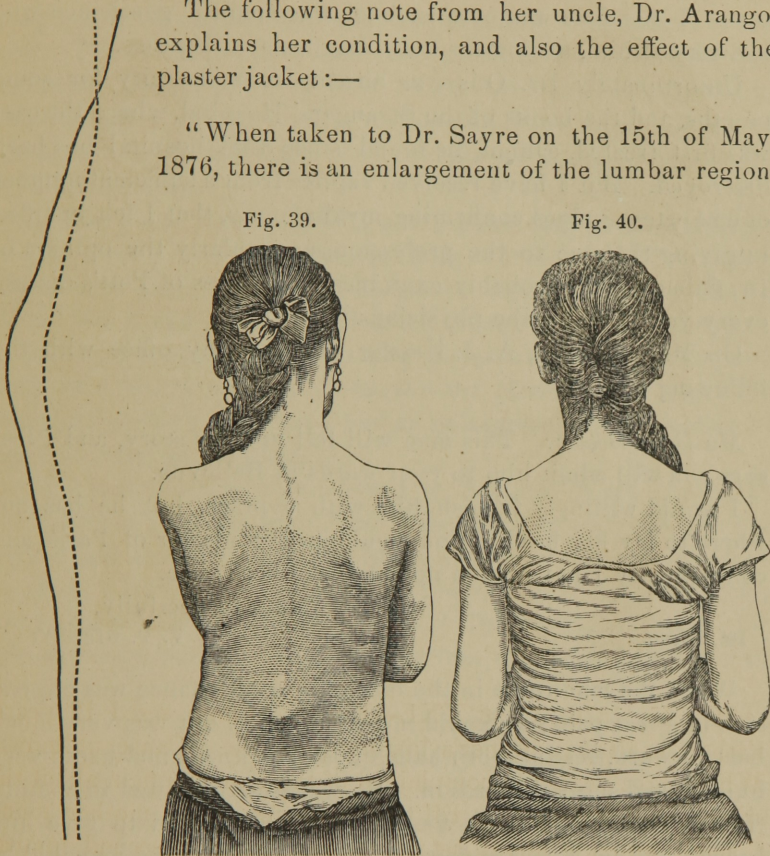
Fig. 38.

The following note from her uncle, Dr. Arango, explains her condition, and also the effect of the plaster jacket:—

“When taken to Dr. Sayre on the 15th of May, 1876, there is an enlargement of the lumbar region,

Fig. 39.

Fig. 40.



with protrusion of the spinal process, and deviation of the spine to the right; when hanging the angle diminishes greatly, as well as the deviation of the spine to the right.

“After the bandage has been applied she walks with perfect ease, and is straight (see Fig. 40).

D. A. ARANGO.”

The following case is one of such extraordinary interest that I wish to add it to my report, but have delayed in sending it to the publishing committee until I could get a confirmatory diagnosis of his case from the different physicians who had had him

in charge during the past four years. As the result of the treatment has been so nearly marvellous, any one would be liable to the charge of having made an error in diagnosis, unless sustained by competent witnesses who had also personally examined the case. I therefore wrote to each of the medical gentlemen who had tended him, asking for their diagnosis of his case.

Unfortunately Dr. Otis was absent from the city for some months, and the books of the Strangers' Hospital, where the case was first treated, cannot be found since that hospital has been destroyed. But I have received replies from a sufficient number of competent judges confirming my diagnosis, that I felt justified in giving the case to the profession, particularly the opinion of Dr. Gibney, who probably examines more cases of Pott's disease every year than all the physicians in the city.

On May 10, 1876, A. J. Hessler called at my office with the following note:—

*My Dear Doctor:* This man will tell you his story, and I feel sure you will admit him to your wards at Bellevue.

I would willingly furnish him with a brace, but he has not where to lay his head. You would prefer plaster of Paris, and consequently I have taken no measure for a brace.

Yours respectfully,

DR. SAYRE.

V. P. GIBNEY.

When the man came in the office his countenance was expressive of great pain; he could not stand erect, but was very much bent forward, resting both hands upon his knees, and had a very hurried and short respiration. He was so exhausted in coming from Forty-second Street to my office, that I had to give him brandy and let him lie down for some time before he could be examined. His history was as follows, as written out by himself:—

“Arthur Alex. Hessler, native of Paris, France; aged 32; musician by profession; of healthy parents, and myself always robust, and very active until the spring of 1872, when I was playing with a comrade, and got struck heavily in the abdomen and back. At the time I was struck lost my breath, and felt a very painful sensation going through the backbone, and since that day have been complaining all the time of great weakness in my back, that has compelled me to keep my bed for many months, on several occasions feeling powerless in my legs and paralyzed in my back.



"In February, 1873, I was admitted by application in the Strangers' Hospital in Tenth Street and Avenue D, under the treatment of Professor Otis, visiting physician; Dr. Kearny, house surgeon of the ward. The treatment I received was cupping and blistering on my back, and constant confinement to my bed. This relieved me to a certain extent, and I was discharged as cured in May, 1873, by Prof. Sands (then visiting surgeon to the hospital). I went to my business for a few days, but had to go to bed again, and have been unable to do anything for the past three years.

"I was under treatment of a great many doctors until I spent all my money, and then went to Roosevelt Hospital, Fifty-ninth Street and Tenth Avenue, in March or April, 1876, and put in Ward No. 4, and treated for diseased kidney for about one month, when Dr. Thompson, then visiting physician, examined me, and told the doctor I was not a case for the Medical Ward, but the Surgical; telling him that I had an enlargement or projection of the lower dorsal vertebra.

"I was immediately transferred to Surgical Ward No. 2, Dr. Rice, house surgeon, and Prof. Wier, visiting surgeon. I was put to bed and cupped on my back, and extension was made of my feet, which gave me considerable relief. After some time they sent me to Dr. Shaffer, 52 West Twenty-eighth Street, for a steel brace, but as I could not pay him \$35 for it I returned to the hospital.

"Two days after this Dr. Rice informed me that it was useless for me to remain in the hospital any longer, as my case was incurable, and advised me to go to Dr. Knight's Hospital for Cripples in Forty-second Street, and Dr. Gibney sent me to you."

This is the man's history as written by himself, and, of course, must be received with all due allowance. I have endeavored to make it correct as far as possible by corresponding with the surgeons in the various hospitals referred to, and the letters in response are hereto annexed.

When he came to my office he was unable to stand erect, and was complaining of an intense pain in the back, and "as if a hot wire was binding him around the lower part of his belly." Upon stripping him, the tenth, eleventh, and twelfth dorsal, and the first lumbar vertebræ were found very prominent; the two last dorsal and the first lumbar making quite a sharp angle with each other.

When he was suspended in the sling he expressed the greatest delight as soon as his heels were lifted from the floor, and said the hot band around his bowels was loosened, and that he could breathe much easier than he had done for months. The extension was continued very slowly and gradually until his feet swung clear, when he almost instantly exclaimed, "that's the first full breath I have had in two years; if I had my cornet now, I could play as well as ever." It is very probable, that if I had applied the plaster bandage *at that time* and retained him *exactly in the position in which he was*, he could have played his cornet that evening as he stated he would. And from what I have seen of him since, I am quite convinced he could have done so.

Being anxious that Dr. Gibney should see the application of the plaster dressings, I took him from the suspending apparatus and laid him on the floor on an air-bed, and immediately sent my servant for Dr. Gibney, who returned in a few minutes with the following note:—

OUT-DOOR DEPARTMENT,  
HOSPITAL FOR THE RELIEF OF RUPTURED AND CRIPPLED,  
N. W. Cor. 42d St. and Sixth Av.

*My Dear Doctor:* This has proved to be one of our "field days," and I will not be able to get through before one o'clock, consequently have to ask you not to save anything for me to day. Thanking you for your kindness,

I am hastily yours,

PROF. SAYRE, May 10th.

GIBNEY."

The man still insisted, that, if I could only fix him in the position that he was in while hanging and keep him so, he could play his cornet as well as ever, and could then earn his \$10 a night and need not go the Hospital. He was so positive on this point, that he refused to go to the Hospital, and, as I was anxious that Dr. Gibney should be present, I refused to apply the dressings until the following day.

The man said he had not a cent of money, but he had a friend in Washington Street near the Battery, where he could stay for one night, and if I could fix him like he was when hanging he could make money enough to take care of himself. I therefore arranged to apply the dressings on the following day at 12. This was an unfortunate mistake, as the exercise of going to the Battery and back was too much for him, and when he returned



the following day he was so completely exhausted, that it was with great difficulty that my assistant Dr. Taylor and myself could get him in the suspending apparatus, and before the dressing was completed he swooned, and we were compelled to lay him down, with an insufficient amount of plaster on him to support, and in taking him down a little too soon it cracked, so that our experiment of having him blow the cornet that night was a failure.

After resting some hours I took him to Bellevue Hospital; but the following day, the "plaster jacket," having cracked, pained him so much that it had to be removed. He was placed upon a water-bed, and freely cupped over the tender portions of the spine, with great relief. The cups had to be renewed once or twice, and the recumbent posture on the water-bed with extension at the feet kept up for some weeks.

After this another "plaster jacket" was applied; but the plaster not being good, it did not afford him the relief I expected, and was removed. Another one was put on him at the hospital, which enabled him to walk around tolerably well; *but did not give him the support requisite to make him perfectly comfortable.* He therefore came to my office about the 1st of July, and I removed it. After washing him thoroughly and putting on him a very tightly fitting flannel shirt, I suspended him and applied another dressing. In this case I used, as I now always do, the bandages made of "crinoline" or "cross-barred wiggins," the meshes of which, being much larger, will hold more plaster than the ordinary hospital roller bandages.

This suspension and application happened to be *exactly right*, and as soon as the plaster had hardened or "set" he jumped up on his feet, and capered around like a wild man. He could take the deepest possible inspiration, and concuss himself upon his heels without the slightest pain or inconvenience.

A short time after, this "jacket" was sawed down the front, and eyelets put in it, so as to be laced like a corset, and could be removed and reapplied at will.

With this jacket properly laced he could play his cornet as well as he ever did, and no one looking at his ruddy face, and watching his elastic step, would ever dream that he was suffering from "Pott's disease," or any other infirmity.

How long before ankylosis will take place, and a cure be effected, of course I cannot answer; but that the man is changed

from wretchedness, pain, poverty, and intense suffering, to perfect comfort, and an ability to earn his living with cheerfulness and pleasure, is apparent to every one who has seen him.

Hessler called to see me at the West End Hotel, Long Branch, on the 13th of July, and I did not recognize him. His form was erect, and his face florid, with the ruddy hue of perfect health. He stated that he was returning from Philadelphia, where he had played the cornet in Gilmore's Band, at the Centennial the night before until 12 o'clock at night, and that he was then on his way to fill his engagement to play at the Hippodrome in New York, at 8 o'clock that evening. I have seen a number of persons who were present at the concert, who told me that, with the exception of Levy and Arbuckle, they never heard the cornet played better than by him.

I am well aware that this sounds more like a "fairy tale" than a statement of actual facts, and therefore have corroborated the statement by the annexed letters of other well-known physicians who are familiar with them.

When we consider the unsatisfactory results hitherto of all our treatment of this disease, and compare them with this case and a number of others that I have seen, we are perfectly justified in using the language of Prof. Alfred C. Post in saying, "it marks an era in the history of Surgery."

HOSPITAL, 135 EAST 42D STREET,  
July 27, 1876.

LEWIS A. SAYRE, M.D.

*My Dear Doctor:* At the time I saw Arthur A. Hessler, May 9, 1876, I had no hesitation in diagnosing caries of the spine. The history and the signs would admit of no other diagnosis. He had great difficulty in walking, was stooped far forward, and the spinous processes of the last two dorsal and first lumbar vertebræ projected about three-fourths of an inch. I regarded him as unfit for out-door treatment, and sent him to you, who kindly admitted him to Bellevue, and returned him to me for inspection, July 9th, or thereabout. He then walked erect, was active, and had so changed in appearance that I failed to recognize him. From him I learned that on the morning of May 10, you applied a plaster of Paris jacket in your office, and sent him to the hospital; that you called the next day, and found him in such pain that the jacket had to be removed; that leeches and ice were



applied to his spine, and that he lay on a water-bed for three weeks; that a jacket of poor plaster was applied, and no benefit followed; that two weeks later another was applied (better plaster), and perfect relief was afforded; that he had been improving in every particular since. Two weeks later I saw him at Gilmore's Garden, no sign of relapse having occurred. He still wore the jacket.

Very truly yours,

V. P. GIBNEY.

35 WEST 33D STREET, Aug. 9, 1876.

*Dear Doctor:* I am sorry that I cannot enlighten you concerning the patient referred to in your note; but I think you will find his case recorded in a case-book which is in Dr. Otis's possession. When the Strangers' Hospital was disbanded, the records were divided among the attending staff, and I am pretty sure that Dr. Otis got the book belonging to his service. You will have no difficulty in consulting the records at the "Rosevelt."

Yours, truly,

DR. L. A. SAYRE.

H. B. SANDS.

NO. 19 EAST 32D STREET, July 24, 1876.

*Dear Doctor:* Dr. Rice is absent in Europe, and my recollection of Hessler's case is very imperfect. From the Hospital records I find that he was admitted to my ward May 2, and discharged from the hospital May 8. I only remember the point that attention was attracted to the apparently rapid progress of the dorsal tumor.

Dr. Rice will probably return in August.

Yours, very truly,

DR. L. A. SAYRE.

R. F. WIER.

Arthur Hessler, musician, France; single; æt. 31; admitted April 27, 1876. Up to 1871 patient says he was a healthy man. Does not know whether he had the lump on his spine before that time or not. At that time he had the gonorrhœa, but denies all other venereal symptoms. Soon after had a severe pain in his shoulders, back, and arms, which he attributed to exposure to cold. The pains all settled in his back, and he was compelled to go to the Strangers' Hospital. He was there some months,

and was then discharged cured. From that time he has been comparatively well at times up to the 3d of April, when he was attacked with shooting pains along the spine, and had night-sweats at the same time; has been growing weaker ever since.

On admission, find a prominence of the spine of the eleventh or twelfth dorsal vertebra, and patient unable to stand. Complains of weakness and pain in the back. Cups were applied, and patient much relieved.

*May 2d.* Patient transferred from the Medical to the Surgical Division. Can now walk, but still complains of the pain and weakness. Cups again applied.

*8th.* Patient discharged unimproved.

S. W. BUDD,

*Sen. Assistant Surgeon Roosevelt Hospital.*

BELLEVUE HOSPITAL, July 31, 1876.

*Dear Doctor:* Your note was duly received, and in accordance with your request I inclose Hessler's history as recorded by my senior assistant, who is the historian. I think it is an excellent case; such a marked improvement. He came to see me a few days ago; he was as lively as a cricket; no one would ever suspect Pott's disease; he was looking very well.

Very respectfully,

HENRY M. SILVER, M.D.,

*House Surgeon.*

Arthur A. Hessler; æt. 30; single; French; musician; admitted May 10, 1876; residence 194 Varick Street. On admission patient had on a splint, which had been applied at Dr. Sayre's office. He was able to walk, but was suffering from pain in the chest, back, and thighs. This splint was cut down on the day after admission to relieve the irritation, and that evening six cups were applied by the side of the spine at diseased point; this treatment afforded much relief. About a week after another exacerbation of pain was overcome by similar treatment. The patient was then placed on a water-bed, upon which he lay for five weeks, feeling more comfortable, as he said, than he had for some time. At the end of this period another plaster splint was applied; this fitted the patient well, and while wearing it he was able to walk in an upright position without difficulty. This was taken off in two weeks, as it had broken down, too little plaster having been placed in the bandage. The patient was



obliged to go to bed again, as he could only stand by placing his hands upon his knees. The third splint, which was applied a few days later, was cut down on the third day, as it was too long below, hurting patient's hips. During its application he fainted. The fourth was applied at Dr. Sayre's office; and four days afterwards this cracked, and was removed. On July 7th, the fifth and last splint was put on at Dr. Sayre's office; this was a good fit, the patient being perfectly easy in it; goes about the grounds at will; is up all day, and has improved wonderfully in general condition. This splint was cut down in front, and a piece taken out; eyelets were then made, and the splint converted into a plaster corset.

When he came in patient was suffering greatly at all times, and was unable to stand erect except when supported by a splint; he was pale, and showed the marks of great suffering. He is stout and healthy, and free from pain. Now, even when the splint is removed, he can stand erect and walk; the splint being now used rather as a precaution than from necessity.

He was discharged July 14, and is now playing a cornet at Gilmore's Concert Garden.

HENRY M. SILVER, M.D.,  
*House Surgeon.*  
ARTHUR BELL, M.D.,  
*Senior Assistant.*  
MARTIN BURKE, M.D.,  
*Junior Assistant.*

THIRD SURGICAL DIVISION BELLEVUE HOSPITAL.

### ADDENDA.

Since the above Report was presented to the Association, I have abandoned the use of the "Davis head support" in cases of disease of the cervical and upper dorsal vertebræ, as seen in Fig. 37, and have accomplished the object desired, namely, suspension of the head and extension of the vertebræ, by means of an iron rod, which is secured to two pieces of malleable iron, which are placed on either side of the spine, and which can be bent so as to accurately fit any curve in the plaster jacket, which has already been applied to the entire trunk of the diseased patient, and retained accurately in position by having attached to them two narrow strips of perforated tin, which should be long enough to very nearly encircle the entire trunk, leaving only a central

line of an inch or so in width in front of the body, for the purpose of cutting or sawing down the plaster jacket whenever it may become necessary to remove it. The central bar is attached by two cross-bars to the upper portion of this malleable framework, and is curved over the top of the head to the vertex; and to its extremity is attached a swivel bar, an inch or two in length, from which the head is suspended by adjustable straps, secured under the chin and occiput. This upright bar is made in two pieces running into each other at the straight portion behind the neck, and capable of being extended to any desired length, and firmly secured in position by screws. To apply the apparatus the patient is suspended in the usual way, from the axillæ, chin, and occiput, and the plaster bandage applied, as usual, over a tight fitting knit or woven shirt. After the bandage has been accurately applied, the patient is removed from the suspending apparatus and carefully laid upon an air-bed until the plaster has hardened or "set." The patient can then stand up, and the apparatus for suspending the head is applied in its proper position, over the back of the plaster jacket, and the lower portion of it bent and moulded until it accurately fits all its various curves. The loose tin strips, being very flexible, can then be smoothly moulded around the jacket which has already been applied to the trunk, and another plaster bandage having been wetted in water is to be carefully and tightly applied over the apparatus and jacket first applied in sufficient number of layers to make it perfectly secure. The tin being rough and perforated, a sufficient amount of plaster will be incorporated into its holes and meshes to prevent any possibility of displacement. We have now a secure point of support from the pelvis and trunk from which the head can be sustained by properly adjusting the moveable rod and securing it by screws.

Its practical application is seen in Figs. 41 and 42. The ease and comfort to the patient, together with the perfect freedom of mobility to the head, make it very much more satisfactory than any contrivance that I have yet seen used.

I will simply add one more case out of a number in which this treatment has been applied, as it is a good illustration of the *immediate* relief that is given to the patient when the support has been accurately adjusted.

CASE XXII.—Lewis Easton Flournoy, aged nine years, residence St. Louis, Mo., was brought to me on 27th October, 1876,



by his father, with the following history: Father and mother both healthy, and boy always healthy and strong until the 25th of

Fig. 41.

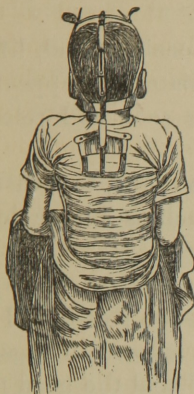


Fig. 42.



December, 1873, while playing in a hay loft he fell, head first, down a hole in the hay mow to the barn floor, a distance of eight feet. He cried for an hour after the fall, saying his back hurt him. He was tolerably well for some three or four weeks; then began to complain of pain in the shoulder; was treated for rheumatism for some weeks without any relief, and it was then discovered that he had a lateral curvature. Drs. Schooley and Payne applied a brace. This brace was worn fourteen months, when it was discovered that he had a double lateral, and a very prominent posterior curve.

Dr. Franklyn, of St. Louis, applied a new instrument, which gave very little relief. This was worn for six months; but the posterior deformity continued to increase, and his "breast bone" to be more prominent. The father noticed about ten days since that he had great difficulty in walking, and for the past three days could not walk at all, or stand without support. When he attempted to stand he had a very short, grunting respiration, and very marked convergent strabismus of both eyes.

I suspended him and applied a plaster of Paris jacket on 28th October, 1876, and in half an hour after, when the plaster became "set," he could stand without assistance. The next day the father stated that he had slept better than he had done for two years, and had eaten a better breakfast than he had known him to since he was hurt. He could walk without assistance, and

could poise himself on either leg by simply steadying himself with one hand on a chair, and could raise the other limb so as to put his foot in a chair. He still carried his head forward in a constrained position—had a peculiar catch in his respiration, and the convergent strabismus continued.

I placed my hands under his chin and occiput, and, lifting his head *very slightly*, the strabismus immediately disappeared, and he exclaimed “that’s what I want.” As soon as I released my support, the strabismus returned.

I sent him to Mr. Rynder’s, 309 4th Avenue, to measure him for an outside support, or “Jury mast,” such as I have described, to be applied over the “plaster jacket.”

On the 8th of November, before a large class of physicians and students in the amphitheatre of Bellevue Hospital, I applied this outside support for head suspension, as seen in Figs. 43 and 44; and, as soon as the plaster was “set” and the head properly

Fig. 43.

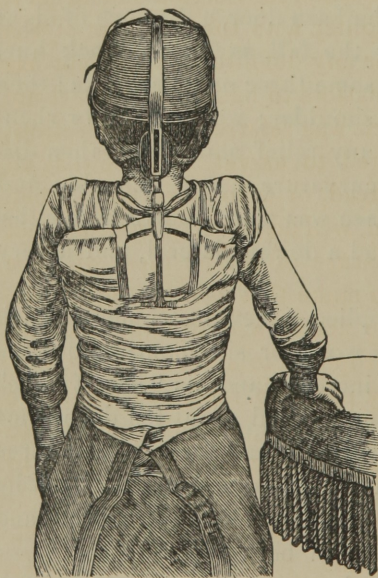


Fig. 44.



suspended, his respiration became natural, the strabismus disappeared, and he expressed himself as being perfectly comfortable. In less than half an hour after the adjustment of the apparatus, he ran up and down the stairs in the amphitheatre without the slightest inconvenience. He went to Philadelphia the following



day, and his father states that he spent nearly two days in walking around the Centennial buildings without fatigue or inconvenience. He left for his home in St. Louis on the 13th of November, but before he left I persuaded him to go to O'Neil, the photographer, and have his picture taken, from which Figs. 43 and 44 are engraved. I regret that I have not a picture of him on the 27th October, but it could not be taken, as he was unable to stand for it.

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EXTRACTED FROM THE MINUTES OF THE SECTION ON  
SURGERY AND ANATOMY.

TUESDAY, June 6, 1876.

The Section met at 3 P.M.

Dr. ALONZO GARCELON, of Maine, Chairman : Dr. E. T. EASLEY, of Arkansas, Secretary.

The CHAIRMAN. We have assembled the Section on Surgery. As yet I have not been able to confer with the members of the Section, and do not know whether any definite arrangement has been made with regard to the matters to be introduced. I am aware that there was a paper which was referred to this Section; but the Secretary has not reported to us yet. I hope that all gentlemen who have papers to read, or who have any special subject to bring before the Section, will do so early, in order that we may know somewhat of the nature of the business we have to attend to. We are in hopes to make this meeting profitable. In order to do that we must all be active and prompt, and lose no time; and if any gentleman proposes to introduce any subject to the Section, or who has any paper to read, and will have the goodness to forward it to the Secretary, we will endeavor to have the matter arranged so as to give each an opportunity to be heard.

We will hear from Dr. Sayre, if he is ready to read his paper.

Dr. L. A. SAYRE, of New York, then read his paper on Pott's disease of the spine. During the reading of the paper he exhibited an apparatus for suspending the patient, and presented several cases which he had treated of this disease, and added, at the end of his paper, that doctors, instead of sending their cases to specialists, ought to treat them themselves. His object in bringing it before the Section was to show the profession that each and

every one could treat this disease as well as he or any other specialist could. Patients can be kept at home and cured, thus saving the inconvenience and expense of travelling. The treatment of the cases here reported has been that of far advanced cases. He had a number of other cases, where the disease has been treated in this way from the outset, and that is an important point; for, if the disease is taken in its earliest stages, before the deformity has occurred, by this treatment prompt restoration occurs without deformity.

A DELEGATE. I would ask if there is any other treatment to be observed—that is, constitutional treatment.

Dr. SAYRE. The best constitutional treatment is: Roast beef, beefsteak, mutton chop; generous diet and fresh air, and as much of it as you can get; and if the patient is subject to indigestion, make him digest.

A DELEGATE. I understand that he said he applied this jacket without applying anything else. I wish to inquire whether he applied it to the naked skin?

Dr. SAYRE. I did not apply it in that way, and I think it would not be a good thing to do.

A DELEGATE. Did you make use of linen?

Dr. SAYRE. I take a woollen shirt, one without seams, that will fit as tightly as possible, and am careful to have no puckers in it; that is as necessary as anything.

The ordinary bandage is too closely woven and too heavy, and will not hold plaster enough; mosquito netting is almost too loose, and, as I say in my paper, it should be a cloth that is loosely woven.

Dr. A. C. POST, of New York. What you call crinoline?

Dr. SAYRE. Yes. Dr. Post has got it.

Dr. POST. I move that this paper be referred to the Committee of Publication. I consider that this principle introduced by Dr. Sayre constitutes an epoch in the treatment of this very distressing form of disease.

A DELEGATE. I would ask Dr. Sayre if this paper has not already been published?

Dr. SAYRE. In my book just recently published, the ideas are laid down; but, as I have had so many cases since proving its practicability, I thought it my duty to bring it before the profession.



A DELEGATE. I was under the impression I had read the article in a medical journal.

Dr. SAYRE. The first article was a clinical lecture.

Dr. JONES, of Illinois. I recommended the same treatment.

Dr. SAYRE. It was spoken of in that lecture. I believed the profession would be benefited by it. The idea struck me as a correct one, but I had not had a sufficient number of cases to practically prove it. I always bring my new ideas to the first class I can show it to; whether it be a medical class, it gets it; if it be the State society, it gets it; and when the ideas are important, I give them as fast as they come to me, so that the rest of the profession can enjoy the benefit of them as they like. The doctor refers to a lecture published two years and a half ago. That was the first suggestion. It was published by a reporter, and that is the way many things get to the profession through the medical journals. Then when my book came out a few months afterwards, I spoke prophetically of it, saying I believed that sooner or later we should see good results from it. Since that time I have had one hundred and twenty cases, which is certainly a very different thing. And now I speak with a positiveness that the thing has been demonstrated. Another point:—

Sometimes you have a projecting sternum, or projecting points at other places; these you will have to guard. If there is a projecting sternum, it is better to let the patient lie on an air-bed. Before I used it I had some trouble, but since I have used the air-bed I have had none whatever. You can put in little pads and pull them out afterwards; and if you squeeze it over the hips before the plaster gets set, it does not press on the ilium.

The CHAIRMAN. The motion before you is that made by Dr. Post, that the paper read by Dr. Sayre be referred to the Committee of Publication.

Dr. BENJ. LEE, of Pennsylvania. I wish to second the motion which has been made, and in doing so to express the deep interest I have felt in listening to this paper of my friend, Dr. Sayre. The idea which underlies this mode of treatment is undoubtedly the true principle for the treatment of Pott's disease. We have done wrong in considering it a purely constitutional affection. We must look upon it as a surgical disease, and treat such cases much as we treat a fractured limb. It is this that Dr. Sayre has done in applying his plaster bandage. He has treated a carious spine as any one of you would treat a broken leg,

and in doing so has achieved the results which he has shown you, which we must all admit to be wonderfully successful. I have not yet myself put this plan in practice. I have been so long making use of other appliances, having the same end in view, have become so accustomed to them, and so well satisfied with them, that I have hesitated to make a new experiment; but after hearing the demonstration of to-day, I feel that I shall be wanting in justice to my patients if I do not at least make the effort to use it. Important, Mr. President, as is the mode of treatment that Dr. Sayre has introduced, his hints with regard to the diagnosis of the disease in its earliest stage are, it appears to me, even more so. I think he will bear me out in saying that a case rarely comes under his care which, had he seen it in the early stages, he could not have saved absolutely from the deformity which it presents. But the mischief is that these cases are allowed to go on from month to month, and sometimes even from year to year (so slow is their development) unrecognized. The doctors say: The child has gastritis or dyspepsia, or worms. I think, sir, that nine-tenths of my cases "have had worms," and they have been dosed with pink-root and santalin for months before the physician had any idea of the true pathological condition, so persistent does this idea appear to be in the minds of the profession. Too often it is left for the parents to discover that the child has a spinal affection, while the physicians ignore it. Now, sir, I wish every member to carry away with him the very important hints which Dr. Sayre has given in reference to this matter of the diagnosis. If I may make a personal allusion, I will allude to one point in this connection to which the doctor referred: He mentioned the fact that pressure upon the spinous processes, in a case of true spinal caries, rarely produces pain, owing to the fact that the disease is almost invariably confined to the anterior portion of the bodies of the vertebræ. In fact, if you place a patient on his face, and make pressure upon the projecting portion of the spine, you naturally separate those vertebral bodies whose inter-pressure produces the suffering, and therefore, so far from *causing* pain, you *relieve* pain. Now, before Dr. Sayre, and others of his progressive tendencies, began to write on this subject, we all were taught—I know I was taught—that the diagnostic symptom in Pott's disease was that pain was produced if you pressed upon the spine. We must disabuse ourselves entirely of this impression. That classical pain does not



exist in the majority of cases. Now the point to which I wish to call Dr. Sayre's attention is that I have insisted upon that fact for many years past myself, in print, and I thought that he alluded to it as not having been heretofore published.

Dr. SAYRE. I did not intend to be so understood. The fact which I announced as original was that by pressure on the ribs we could detect the existence of inflammation of the articular facets.

Dr. LEE. I am glad to find that the misunderstanding was my own. This additional point in regard to the production of pain by pressure upon the ribs communicated to the facets of the articular processes, is certainly of very great importance, and Dr. Sayre is entitled to the merit of having been the first one to introduce it. I confess that it had never occurred to me to make use of it as a point of diagnosis in cases generally, although occasionally a case of Pott's disease has presented itself complicated with so much lateral deviation that my attention has been called to the fact that there must be destruction of the articular facets. Another point which is also somewhat personal: one of the doctor's correspondents, quoted in his paper, complimented him on his invention of the hanging machine as he termed it, the suspension apparatus. The doctor himself does not make any such claim, as I understand it.

Dr. SAYRE. Mr. Rynders, the instrument-maker, is entitled to credit for that.

Dr. LEE. The idea of making a suspension apparatus for the purpose of suspending the body in the treatment of spinal distortions was first introduced into this country by Prof. J. K. Mitchell, of the Jefferson school, whose lectures many of you attended and enjoyed. Although most successful in his hands, it fell into entire disuse, until, acting on the suggestion of Prof. Mitchell's son, Dr. S. Weir Mitchell, of Philadelphia, I began myself to make use of it with certain modifications. I am now, and have been for ten years, in the habit of using suspension by the occiput and chin, not as a means of placing the patient in position for the application of other apparatus by the use of the instrument of support, but itself as a means of treatment; allowing the patient to suspend or extend himself daily for a certain length of time by means of a rope passing over a pulley. I will endeavor to have one of my apparatuses here to-morrow for Dr. Sayre's use; and if I may be allowed, will introduce a patient who will demonstrate the feasi-

bility of suspension in such a way as to make effective extension of the spinal column, thus relieving the pressure at the seat of disease.

Dr. I. N. QUIMBY, of New Jersey. I would like to make a further remark, and that is that it does seem to me that Dr. Sayre draws a pretty strong conclusion in saying that he believes that these cases are all traumatic. I do not know but that the Doctor is correct, and yet it seems to me that there are some spinal affections that are strumous, whatever that means; whether it has its origin in a syphilitic taint or something else, deponent saith not at present, but it seems to me to be so. I may be rather bold in presenting my opinion, but if Dr. Sayre will allow it—

Dr. SAYRE. Certainly.

Dr. QUIMBY, of New Jersey. To say that all spinal affections are the result of blows or of some force, it does seem to me is wrong. I have had but few cases, but I could not at all detect by examination or by inquiry that there had been any injury whatever; and the patient or the parents of the patient were strumous themselves, and we know, of course, that as father so is son constantly; and hence it seems to me that there are some cases really of a strumous character that have spinal difficulty. I would like to ask Dr. Sayre whether he has been always pretty sure, from the investigation made, that all of these cases were traumatic, and whether there was not some little suspicion that they were of a strumous diathesis or cachexia?

Dr. SAYRE. I believe I tried to make myself quite clear on that point, and I know that you can have Pott's disease and have swellings of the joints in strumous patients. I never taught such nonsense in my life as that they could not exist together, and yet I have been represented as being a teacher of that doctrine. I tried to make it as clear as I could that a strumous child would have disease developed in his spine by very much less injury or force than a robust, vigorous, strong child; but that even in these strumous children, the disease requires an exciting cause for its local development. Whether from inherited syphilitic taint, or from some tubercular diathesis of his ancestors, or whatever constitutional cause there may be, I take it that if it is a constitutional affection inherited from the father or mother, it involves the whole system, eyes, head, heels, back, bones, blood, yea, his whole constitution; it is all tainted with whatever constitutional taint he has inherited. Now, what has developed it in one par-



ticular point more than in another as a localized development of this constitutional taint, is the kick, blow, rack, strain, thump, bump, or some other traumatic trouble which has been the exciting cause: that is the way I look at it.

Dr. QUIMBY. I would like to ask the doctor if he finds that cases where there is a taint of struma are as easily cured as where there is no struma, or where he has positive evidence there is a traumatic cause?

Dr. SAYRE. It is hardly necessary to answer such a question as that; as a matter of course every one knows it is not.

The paper was then referred to the Committee of Publication.

Dr. SAYRE. On Saturday last I received a letter from Dr. Jones, of Maryland. I do not see him here yet to-day; he may be here to-morrow. He stated in his letter that he had a child with a diseased back. Some one recommended the Taylor's brace; finding it inconvenient, he had sent it to a physician in Washington, a young doctor who had attended cases with me. On taking up my book in one of the bookstores, he had read my treatment of Pott's disease, and applied it, but not with entire satisfaction, and so he wrote to me in New York, speaking of coming there and having it applied. I wrote to him that if he would come here, he being a medical man, I would make a practical application of it in his child's case, and by coming here he would save the trouble and expense of going to New York. Yesterday morning I received a letter from him expressing great gratitude that I was willing to meet him half way; he would be here to-day or to-morrow. If the Committee of Arrangements will find a place, I will hang the apparatus right in this room at some hour not during the session of the Section.

The CHAIRMAN. It will be proper to state, as many of the gentlemen attended the Convention at Louisville, that Dr. Sayre applied, in the presence of some members of the profession, this supporting bandage to a child that was presented there to the Association. If there are any gentlemen from Kentucky who know anything of the results of that case, we would be glad to hear from them.

Dr. Martin, of Boston, Massachusetts, is present in the room, and informs me he has a few remarks to make in reference to a splint which he has applied several times. Is it the pleasure of the Convention to give Dr. Martin a hearing upon this subject?

A gentleman has just made a remark to me that the next paper is one by Dr. Dowell, of Texas.

Dr. QUIMBY. I would like to make a motion just at this point. I move that if Dr. Sayre's patient arrives, we give way, and allow the doctor to apply the bandage before this Section.

This was agreed to.

Dr. EASLEY, of Arkansas, said: I have listened with great interest to the paper. Dr. Sayre, and Mr. Bryant, of London, have shown us more clearly than anybody else, that there is no necessary connection between scrofula and diseases of the bones, and for this service we owe them a large debt. We have been taught that *morbus coxarius*, as well as Pott's disease, was always associated with the so-called strumous diathesis. We are now prepared to say that their occurrence is only a coincidence; in a word, that struma is to be considered a predisposing cause of the trouble, as it is of so many other pathological conditions. Highly as I esteem the gentleman's opinions, however, I fear that he is disposed to go too far in regard to the traumatic origin of the malady. It is not hard to understand how a wound, blow, or concussion may light up the disease, provided a predisposition already exists, and no doubt spinal curvature often occurs in this way. We grant that violence may bring it on, even in the absence of a predisposing cause; but we have undoubtedly a large class of cases in which the osseous lesion is an essential disorder, a condition described as Rachitis, Osteo-malacia. Here you will find the abdomen protuberant, the patient emaciated, great malaise, and vitiated tastes. The important fact is, that there is mal-nutrition of the entire osseous system, spinal curvature resulting as a part of the common distress.<sup>1</sup>

#### EXTRACT FROM THE MINUTES OF THE ASSOCIATION.

On motion of Dr. W. C. JACOB, of Ohio, it was

*Resolved*, That this Association is under marked obligations to Professor L. A. SAYRE, for his admirable practical demonstration of his appliance for Pott's disease, which, indeed, marks a new era in surgical science.

<sup>1</sup> Dr. Sayre applied the plaster Paris bandage to two cases of Pott's disease before the Section, with the most satisfactory results, both children being able to walk as soon as the plaster was "set."

















